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ABSTRACT

A review of the discipline of geography as it exists in the State University System in Florida is outlined. The report is presented in four parts. Part 1 discusses the role and position of geography in the curriculum, and geography in relation to Florida and its State University System. Part 2 features a discussion of the responses to State University System and program queries. Part 3 contains an evaluative overview of geography as it exists in the Florida State University System. Part 4 evaluates individual programs for five universities that are part of the State University System (Florida Atlantic University, Florida State University, University of Florida, University of South Florida, and University of West Florida). Four appendices are included. (DB)

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GEOGRAPHY PROGRAM REVIEW

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STATE UNIVERSITY SYSTEM OF FLORIDA

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REVIEW OF GEOGRAPHY:
STATE UNIVERSITY SYSTEM OF FLORIDA

B.L. TURNER II

GRADUATE SCHOOL OF GEOGRAPHY

CLARK UNIVERSITY

BOR 89-10

September, 1990

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FORWARD

The State University System's review of geography was initiated in the Spring of 1989 with the identification of the lead and five institutional consultants, and the completion of the self studies generated by each of the five geography programs. The entire review team met in Tallahassee on April 3, 1989, and was briefed on the review process by the SUS. Following this meeting, the five institutional consultants travelled to their respective programs of review. Accompanied by Dr. R. E. LeMon (SUS Program Review Specialist), I visited each program in conjunction with the institutional consultant, who, in all but one case, had spent at least one day in consultation with the program and institution previous to my arrival. The order of institutional visits were: University of West Florida, Florida State University, University of Florida, University of South Florida, and Florida Atlantic University. The program visits were completed on Monday, April 11. Thereafter, I composed the final SUS review document, with the assistance of Dr. LeMon and the SUS staff, based on reports prepared by the institutional consultants and our collective experience. After evaluation of a draft of my report by the various programs and institutions, a final debriefing was held on January 12, 1990 which involved SUS personnel, the chairs and administrative representatives of

the five geography programs, and myself.

The SUS and the five geography programs were able to obtain the services of a distinguished group of consultants, all important scholar-teachers within the discipline and at the interdisciplinary level, most of whom have also served in various administrative capacities, and all situated in excellent geography or related programs of study. Each consultant was a specialist who fit well with the individual program's teaching and research strengths. The consultants by institution were:

- Florida Atlantic University - Dr. Kenneth E. Corey, Professor of Geography and Urban Planning, and Dean, College of Social Sciences, Michigan State University;
- Florida State University - Dr. Susan L. Cutter, Department of Geography, Rutgers University;
- University of Florida - Dr. Richard L. Morrill, Department of Geography, University of Washington;
- University of South Florida - Dr. Thomas L. Bell, Department of Geography, University of Tennessee;
- University of West Florida - Dr. Don R. Hoy, Professor Emeritus, University of Georgia.

I am indebted to these consultants for their outstanding cooperation, assistance, and contributions. In each case, my visit to the program in question was expedited due to their diligent work and preparation, and their individual program assessments were invariably on-the-mark and insightful.

I also thank the various geography programs for their cooperation and assistance throughout the entire process.

They responded efficiently to requests for additional information, were open and honest during various interviews, and generally made our visits both intellectually and personally rewarding. The SUS has some very hardworking and dedicated individuals throughout their geography programs.

Finally, I am deeply appreciative of the time and effort given to me by Dr. R. E. LeMon. He was most helpful throughout the review, leading me efficiently through the hoops and hurdles of the review.

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PART I

GEOGRAPHY: ITS ROLE AND POSITION

In a world that increasingly is interconnected economically, politically, environmentally, and even culturally, Americans remain woefully ignorant about the world around them--the world as taught by geography. The State of Florida represents an unrealized opportunity for geographic education and service to a region incurring phenomenal urban growth and environmental problems, and whose future is increasingly linked to its international connections.

Well conceived geography departments--those with teaching and research agendas consistent with the strengths and missions of the institution, proper levels of staffing and equipment, and a vigorous and productive faculty--typically serve several fundamental roles: providing a core for traditional liberal arts education through multidisciplinary integration by addressing the "where" question; offering professional and technical training for several fields of planning and in cartography; and acting as the catalyst for integrating teaching and research on the frontiers of various disciplines and subjects.

Owing to a number of factors peculiar to geography in the United States, it is possible to establish a highly visible program with relatively less investment than in many other disciplines.

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The SUS Master Plan lists four major priorities, three of which are to improve undergraduate education, to solve critical problems for the State, and to forge public-private relationships. Geography is a discipline which can make great contributions toward these goals. In regard to the first, geography teaches skills ranging from the liberal arts-based ability to synthesize and "piece together" parts of an intellectual puzzle, to training in equipment and disciplined inquiry more associated with the hard sciences. In regard to the second, several of Florida's most critical problems are precisely those which are addressed and solved within the province of geography. In regard to the third, Florida is well-positioned for public-private linkages involving geography, linkages capable of addressing many of its critical problems.

A Disciplinary Overview

The Global and U.S. Traditions. At the international scale, geography serves a fundamental role within the halls of academe, as both a teaching and research discipline. Geography is basic to the curriculum of lower and upper schools, and to colleges throughout the world. For example, a "high school" student in Great Britain, where geography is part of the national education core curriculum, must take geography courses during each of the upper eight years of

study; the same level student in Costa Rica has five years of geographic studies (shared with history). This significance of geography in basic education extends into colleges and universities. Geography is one of the top three majors for all college graduates in Great Britain and ranks similarly high among students in France, Germany, and elsewhere.

This level of interest obviously translates into a large number of undergraduate and graduate programs of geography throughout the world. The great universities of Europe, the Orient, Canada, and Australia have large geography departments, be it at Cambridge, Oxford, the Sorbonne, Heidleberg, Lund, Toronto, Australian National, Lomonov (Moscow State University), or Beijing. Likewise, geography plays important roles throughout the major universities of Africa, Latin America, and South Asia; even the universities of Hong Kong, Papua New Guinea, and Fiji have large geography programs in comparison to some American institutions. In addition, several countries have major geographic research institutes: for example, the Institute of Geography, USSR Academy of Sciences (+700 positions), and the Institute of Geography, Chinese Academy of Science (+500 positions). Even developing nations have research centers where geography is seen as the key integrating element for studies involving urban and regional planning, resource development, and environmental studies. Examples include the Center for Environmental Studies, University of Khartoum, and the Bureau

for Resource and Land Use Planning, University of Dar es Salaam.

Perhaps only in the United States is geography a misunderstood discipline. Why this is so, and the reasons for the discrepancies between our situation and the rest of the world, is a subject that has drawn considerable attention of late, although much of it is contentious. Geography rose to prominence in Europe on pragmatic and intellectual grounds. Europeans have long been required to understand and deal directly with a multitude of peoples and places, a result of the small size and large number of countries within the "sub-continent" itself and of its international dominance through colonialism. Geography served, as it still does, as the educational basis for this understanding. But perhaps as important, the intellectual traditions of European education have valued holistic approaches and synthesis of the kind that marks high level research in the discipline.[1] The geographic traditions of the Europeans were firmly planted throughout the multinational educational systems that they dominated throughout the 18th and 19th centuries.

In contrast, because American education has long been

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[1]It is noteworthy that, because of geography's significant role in European academe, it has a long tradition of attracting some of the brightest minds to its ranks. A brief selection of such distinguished individuals includes Immanuel Kant, Alexander von Humboldt, Vidal de la Blache, Sir Halford Mackinder, and Torsten Hagerstrand.

separated from its European roots, it developed its own traditions peculiar to its prevailing conditions. Compared to Europe, early America was "isolated" from international science and was dominated by more uniform socioeconomic and cultural traditions. Geography's early pragmatic role was not as critical here. Moreover, the history of American education, at least in this century, has been based in a philosophy of "scientism," in which problems and disciplines become increasingly myopic; subfields or specialties splinter into a new discipline, rapidly losing the broader interests and traditions from which they emerged. One drawback of this type of development is that the training of such narrow specialists often leads to the loss of the ability to integrate the "whole" or "system;" the specialist must "retool" when confronted with a problem that requires such integration. Witness, for example, the recent international efforts to deal with human-induced, global environmental change.[2]

Brief History and Status in the United States. Modern geography began in the United States in the late nineteenth century by William Morris Davis in the Department of Geology at Harvard University. From its roots in the earth sciences,

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[2]By way of analogy, this tradition of myopia has even struck a negative cord within the "natural" sciences, as attested by the bitter battles between the so-called molecular fields of biology and chemistry, and the more holistic fields of ecology or taxonomy (systematics).

the discipline rapidly grew to incorporate a very strong human dimension and gained disciplinary status. The first graduate program started in 1903 at the University of Chicago, followed by the Graduate School of Geography, Clark University, in 1921. By the mid-point of this century, geography was taught within most of the "Ivy League" and other prominent private institutions such as Johns Hopkins and Syracuse universities. Likewise, large and strong geography programs were housed within the public universities of the Midwest, Great Plains, and Pacific coast. In the 1950s, however, a series of events initiated a demise of the discipline within the "Ivy League," with impacts extending throughout American academe in general but especially in private institutions where, over a 30 year period, several once highly rated geography programs were closed.[3] The demise of individual geography programs when housed within highly regarded research institutions has been typically initiated by problems internal to those programs. Yet, the mere fact that a discipline deemed so fundamental to education throughout the world's academies would even be considered for closing demonstrates the unique view of geography that has emerged in American education.

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[3]The situation began at Harvard where a series of idiosyncratic issues led to the challenge of geography as it was housed within geology. Geography was closed on the promise that it would be reconstituted; this has yet to happen, despite the outcry from Harvard alumni and a recent segment of Harvard Magazine requesting the reinstatement of the discipline.

But while geography has struggled within parts of the private sector of education, it remains very strong and vigorous in the public universities. Geography has a long tradition within the "Big Ten," "Big Eight," and "Pacific Ten." The past 30 years have witnessed, for example, the development of geography programs throughout most of the institutions of the California University System, and the rebirth of geography within the "Sun Belt" as attested by the establishment of new or reinvigorated graduate programs at the University of California at Santa Barbara, University of Southern California, Arizona State University, University of Texas, and University of South Carolina to name a few.

Today there are some 350 undergraduate and 145 graduate departments, with 52 institutions granting a Ph.D. in the United States. Closely tied to the American geographic community are the 42 undergraduate and 27 graduate programs in the Canadian system of higher education. Together this community, and professional geographers in the private and governmental sectors of employment, support the Association of American Geographers and the Canadian Association of Geographers. There are over 6,000 members in these organizations. Annual national meetings consistently draw over 3,000 geographers and persons from related disciplines from throughout the world.

Geography and geographers are represented throughout the research agencies and academies of the country. Strong and

vigorous departments are housed within many of the elite graduate institutions of our country. The National Science Foundation contains a funding program in Geography and Regional Science, and geographers receive funding from a number of other programs as well. Geographers are well represented within the ranks of the committees of such institutions as the National Research Council, Social Science Research Council, American Association for the Advancement of Science, and National Endowment for the Humanities. Geographers also hold major positions within research and administrative arms of governmental agencies: the United States Department of State (which houses The United States Geographer), Oak Ridge National Laboratory, and the United States Geological Survey. The same pattern of involvement can be found at the international, state, and local levels as well.

It follows from this brief discussion that employment opportunities for those trained in geography include both the academic and non-academic. Assurance of employment in a job related to the field of geography is, of course, tied to the level of degree attained, although specialization is also important. Well trained cartographers can find employment within their field of training with only a BA/BS degree, while the demand for computer cartographers and GIS specialists with advanced degrees exceeds supply. Also, those trained in the applied and technical fields of the discipline (regional-

urban planning or environmental management) can usually find related employment with MA degrees. The demand for geographers within academe remains steadily high, although this varies by specialty.

The Academic Discipline. This document is not the place for lengthy discussion about the definition of the field, a surprisingly contentious subject at best. Perhaps a consensus of geographers would agree that the 'where' questions--where does the event occur and why does it occur where it does?--are central to the discipline. In this view, location or place, both specific and comparative, is instrumental to understanding, and methods conducive to "thinking spatially" are critical to the field. Geographers are linked more by an interest in these questions and the resulting approaches of study than they are by topics of study. This gives rise to an unusual situation that may not be appreciated by some within academe: individual geographers (and, in some cases, individual programs) may have more in common topically with non-geographers than with members of their own department. This relationship is both a boon and a bane to the discipline, at least in the eyes of many educational administrators who apparently seek concise, bounded units for teaching and research identity. Geography, by its very nature, is a discipline that continually seeks outside links because the 'where' questions can be asked of almost any event or item, virtually all of which are explored by other disciplines. Of

course, the methodologies and analyses following from the 'where' question are most sophisticated within geography because of its emphasis on it.

Traditionally geography has limited its interest in the 'where' question to those events that occur within the biosphere or "living zone" of the earth. Within this zone, however, the range of inquiry is enormous. Nevertheless, geographic teaching and research can be categorized within four broad branches: earth science, cartography, and human-space and human-nature relationships. Earth science or physical geography is grounded firmly in the natural sciences that focus on the spatial patterning, origins, and consequences of the elements of the biosphere. In many institutions, students focusing on this branch of geography receive a B.S. degree. Cartography involves all aspects of mapping, from the interpretation of remotely sensed imagery to the development of geographic information systems (GIS), which focuses on the spatial analysis and display of extremely large data bases for the purpose of computer mapping and analysis. The study of human-space relationships employs spatial patterning and analysis as a means to understand human activity, ranging from regional expertise to modelling of the observed patterns. Finally, human-nature relationships explore the interactions of human activity and nature, ranging from studies at the household to the global scale.

A well-trained geographer has been exposed to each of these branches, and, at advanced levels typically engages in work that requires the use of the tools and analytical synthesis of at least two of the branches. For example, a resource geographer working on groundwater use may draw upon remotely sensed imagery for data on patterns of use and upon GIS as one means of analysis, while the question at issue requires a synthesis of themes that cross-cut resource economics (human-nature branch) and groundwater dynamics (earth science branch). It is precisely this training, wedded to topical specialties in other fields of study that marks the geographer. This has been referred to elsewhere as the specialist-synthesis approach.

Programs of geography that are consistently highly ranked (only the graduate programs are so evaluated) are those that maintain breadth across the four main branches of the field; this is so for intellectual reasons discussed and because the "hot topics" in the field ebb-and-flow from one branch to another or within a branch. To maintain this breadth, however, requires a faculty numbering at least in the mid-teens, or judicious appointments of affiliated faculty who work closely with the geography program. Indeed, the number of geography faculty required for strength in a specialty area or branch is, in large measure, dependent on the size and composition of the university setting which determines, in part, the potential role of affiliated faculty. Smaller

geography programs in smaller institutions are commonly confronted with a dilemma--maintaining undergraduate teaching breadth while offering a strength in a graduate-research area. In some cases, it makes sense to focus on one or two branches of the field, especially where a related institutional program can provide additional teaching and research links.

The topical breadth of geography is matched by the breadth of the realms of knowledge upon which it draws and practices. Within a single program, individual geographers may operate within the realm of the science of the material world, the social science of the reflexive human world, and the humanities of the contextual world. From an administrative perspective, this breadth can be confusing because the criteria for evaluation vary: the outlets for publication, the expectations for funded research, the use of the journal article or the university press book, and so on.

Perhaps more importantly, this diversity is related to different perspectives among individual (or groups of) geographers regarding not only the topics of study but the approach or logic used to address them. For example, a structural-based, social science approach cannot and does not seek to match the empirical referents demanded in the experimental science approach, and yet both of these approaches maintain an aura of "objectivity" and "generality" that is not necessarily part of the humanistic interpretation. The discipline has long been credited for this

pluralism--and set central to the entire spectrum of knowledge--facilitating topical syntheses among the realms of knowledge. A potential problem exists, however, in that the recent climate of academics and the discipline have demanded that the specialist side of the geographer increase proportionately to the synthesis side. Increased topical specialization, a necessity for the modern geographer, has the danger of creating factions within the discipline: geographers may simply have no or little interest in other topics of study within the field, and more importantly, may develop little tolerance for alternative approaches to those topics. Ultimately, strong programs of geography are those that maintain a genuine respect for the range of subjects and approaches that are pursued (although it may not be possible to have this range present in a single program).

Special Teaching and Research Needs. Geography requires special teaching and research needs. Some are obvious, but others are not. Perhaps the critical administrative item of note here is that geographic pluralism leads to variable equipment needs; parts of the discipline are "high-tech" oriented, although rarely in the vein of the "big equipment" sciences. A common error is to assume that its needs are uniform and of the kind equivalent with the social sciences only.

Basic undergraduate geography instruction--assuming breadth as noted above--requires such teaching aides as wall maps, atlases, drafting equipment, computer graphics-GIS hardware and software, and earth science equipment, depending on the program structure. It is common for geography programs to maintain extensive map collections or libraries staffed by a trained map librarian; this facility can be housed in the institution's library system. Regardless, a map library is a critical resource for most geography programs.

A cartography laboratory staffed by a trained cartographer (usually MA level) is another critical resource that links the teaching and research arms of the program. The cartographic assistant typically handles some of the basic instruction of undergraduates while providing the important graphics that mark much, if not most, of geographic research. Today, this assistant must be trained in computer cartography, and this form of cartography is essential for basic teaching as well as for modern graphics production. Field equipment for physical geography varies by program.

For advanced training and research, certain segments of geography require considerable equipment by the measure of the social sciences in general, but much less than that of the natural sciences. The quantitative segments of the discipline, including GIS, require access to mainframe computing. Mini or micro computers linked to a mainframe are common among geography programs, especially for GIS-related

research. The advanced computer graphics-GIS laboratory requires a graphic work station--an assortment of printers, plotters, and digitizers, as well as other related equipment and software. Research laboratories and field equipment are a necessity for advanced research in the earth science sections of geography, but again the type of space and equipment needed varies according to research emphasis (climatology, soils, fluvial geomorphology).

GEOGRAPHY, FLORIDA, AND THE STATE UNIVERSITY SYSTEM

The relationship between the educational and professional needs of the State of Florida and the roles of advanced education in geography towards meeting them has yet to be fully articulated in the State University System; nor is it apparent that the potential roles and rewards of the discipline are necessarily recognized on a system-wide basis. In this vein, geography in Florida might best be described as a case of missed opportunities, both for the discipline at large and for the citizens of the state. A large number of rationales supporting this case can be made, including the simple but important mission of geography in the basic education of Floridians. The state of Florida is part of the National Geographic Society's Geographic Alliance program dedicated to raising geographic awareness and improving

geographic education in K-12. Much of the case that the Alliance makes for high school education in geography is applicable to college level geography as well. Here, four examples of the potential role of geography are provided.

Florida represents one of the most rapidly growing regions in the developed world. Within less than a 50 year period, the state has been transformed from a small agrarian based population focused in the northern parts of the state, to a massive, industrial-agrarian and urban based population especially in the central and southern parts of the state. Urban-industrial growth of this kind demands careful planning and management for transportation and essential facilities (e.g., schools, hospitals, sewer systems). These planning issues must be addressed through the interrelationship (e.g., zoning, groundwater safety) within and among the spatial units in question. The spatial component and synthesis of the complexities are precisely the ingredients that urban, economic, and other related subfields of geography provide. Geography, therefore, should be a key discipline for the training of the urban and regional planners that Florida must have as it enters the 21st century.

Phenomenal growth and resulting pressure on the land is taking place in some of the most sensitive and unusual treasures of nature: the Everglades, and the coastlines and aquifers of Florida. Critical to the long-term sustainability and economic health of the state is proper planning and

management of the human uses of the state's fragile environment. Again, the wedding of the human driving forces of change to their human perceptions and responses is a long-held tradition of study in geography and critical to the training of the state's environmental and resource planners.[4]

Southern Florida has become an entry and exit port for America's connection to much of Latin America and the Caribbean. It is the crossroads for peoples of many nationalities and languages, and its economy is very much related to international activities. It follows, therefore, that Floridians should be well educated in the geography of the world across the gulf and sea. Understanding the peoples, cultures, and resources of the lands to the south can only enhance Florida's continued cultural and economic linkages. Obviously, geography is essential to education in this vein, including its study programs within Latin America and the Caribbean.

Finally, Florida is home to NASA and spinoffs of the space industry. One such spinoff that has only begun to mature in terms of its significance is the use of satellite imagery to study and monitor the earth and to use the geographic

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[4]As an example of geography's role here, it should be noted that the discipline plays an important role in the International Geosphere-Biosphere Program, a massive effort to study the changing earth. Within the American national effort (Committee on Global Change, NRC), the study group on the "human dimensions" is chaired by a geographer, and geographers are prominent on related NRC and SSEC committees.

information systems as the "automated way" in which the information from this and other imagery can be refined, elaborated, and analyzed in a number of sophisticated ways. Geography has been a leader in the use of these technologies and in the actual development of GIS software.[5] It has a key role to play in training Floridians who will enter into the next generation of these studies.

The SUS, however, maintains only four geography departments proper, and offers only one doctoral and four master level programs--this situation in the fourth most populated state in our nation![6] By way of comparison, the state of North Carolina, with half the population of Florida, offers the same number of doctoral and master level programs.

The large and growing population of the state and the needs of the region provide an atmosphere in which geography should become a fundamental part of the state's curriculum in higher education not only for intellectual reasons but also because of the student demand that will follow. Currently, Florida is under-represented in the field in terms of the number of programs and student enrollments in the

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[5]The National GIS Center is housed primarily in two geography departments (UC Santa Barbara and SUNY Buffalo).

[6]The geographers at the University of West Florida operate an environmental management program, not a geography program per se (see Part IV). A fifth geography department is housed within the state at the University of Miami where an MA degree can be obtained.

universities, given the population of the state.[7] Since there is strong evidence, based on the site visits of this program review, that the students in the SUS find geography a worthwhile experience, the overall low number of student enrollments in geography within the state reflects the small number of geography departments and total faculty within them. It is, therefore, difficult not to conclude that geography or related programs (e.g., environmental management) should and could become important undergraduate programs in all of the state universities, and that the state should readily support at least two Ph.D. programs in geography and additional M.A. programs.

Given the projected economic growth of the region, a strategically designed and implemented program of development could make Florida the leader of the South in geographic education, placing it on par with the per capita strength of North Carolina but on a total number strength greater than Texas. Such a plan would integrate K-12 geographic education with that of the community college and university, perhaps more in line with the uniformity of math or language curricula. In addition, quality programs of advanced study could be developed, in part, because of the sheer "distance"

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[7]According to 1988 statistics, student enrollment in college geography courses in America was 507,272. Again, by way of comparison, one out of every eight students in California and in North Carolina was enrolled in a geography course. The figure for Florida was one out of every sixteen students.

to other such programs and the strong Latin American linkages that the state universities have established.[8] Elements of the SUS have embarked upon courses of education and research geared to match these state needs with the role of geography. Much more could be done, however, on the parts of both the individual programs and the educational administration of the state and the member institutions. It is in this vein that the situation of Florida and the SUS can be viewed as an "unrealized opportunity for geography."

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[8]The nearest comprehensive graduate program to Florida that has been consistently rated close to the top ten in the country is at the University of Georgia, although the department at the University of North Carolina, Chapel Hill also is rated highly. More recently, the program at the University of South Carolina has received attention for growth in certain subfields of the discipline.

PART II

RESPONSE TO SUS AND PROGRAM QUERIES

The charge to the review team included a set of specific questions raised by the Board of Regents and by representatives of the various geography programs. These queries involved issues generic to the review of any discipline and specific to the case of geography in Florida. For the most part, responses to these queries have been provided throughout the general comments, the SUS overview, and program assessments located in Parts III and IV of this document. Brief or capsule summaries to each query are offered here for the system's programs in general, unless otherwise noted.

General

1. Considerable variability exists within the system in regard to individual university goals to promote geography as a "research" discipline. Part of this variability is understandable because programs range from BA to MA to Ph.D. Several observations are noteworthy, however: (i) It is not clear that administrations in general understand the discipline well or give it high or even medium priority in their research plans (although exceptions exist). (ii) No institution provided a concrete statement or document about its vision of geography within it. (iii) Where administrations are receptive to geography, either support funds appear to be

lean or the geography programs have not been as active as they should in promoting research and growth; where programs have been assertive, administrations appear ambivalent about the discipline.

2. For the most part, geography programs have steered programmatic paths (proposed content) that are consistent with their institutional missions, and local and student needs. Sufficient information on Florida's Master Plan or geography's role in it was not provided to make detailed comments. It is noted, however, that all but the smallest and most specialized programs provide strong institutional support in regard to "global literacy," and all programs provide exceptional service courses.

3. Various members of programs throughout the system are engaged in the promotion of geography in K-12 education and in teacher training. It was not made clear, however, whether these efforts were centrally coordinated within a formal plan, were ad-hoc measures, or were some form of organization in between these two extremes. It may well be worth the effort of the SUS to promote a coordinated effort if it does not exist. (Note that this reviewer had very little time to speak with the designated state head of the National Geographic Society program, and no information/documentation was provided on the subject.) Two observations are noteworthy:

(i) Several individual faculty claimed that they received marginal support at best from their programs and institutions

for their efforts with the alliance. And, (ii) while all segments of geography should not be directly involved in such efforts--a complementary effort at the advanced research level is as fundamental to the health of geography as is the K-12 alliance--appreciation for the alliance program varied considerably among the geographers in the state.

4. Overall the SUS geography programs are providing solid undergraduate education in geography, especially as it fits within a general liberal arts mode of education. The one exception is the extreme variability in modern training in cartography and certain analytical skills. The MA programs have generally focused on applied-oriented degrees, emphasizing environmental management and urban-regional planning. This focus seems to be on target for the needs of the state, student demand, and programmatic health within respective institutions. The overall problems are (i) the variability in training in modern skills and techniques--computer graphics, GIS, quantitative techniques; (ii) the relatively low numbers of advanced courses; (iii) the level of attention, proportional to the undergraduate program, given to supporting as strong and as large graduate programs as is appropriate; and (iv) the level of institutional support (stipend levels and amounts). The Ph.D. program appears to be headed in the right directions, apropos quality, scholarship, and so forth. This growth may be stymied, however, without a change in attitude about the manner in which graduate training should

take place and an overall upgrade in the number and quality of graduate stipends. Overall, the graduate programs are on target in regard to content, but they require considerable revitalization to obtain the vigor and stature commensurate with their peer programs outside the state. Indeed, in this reviewer's opinion, it is this element of the SUS programs (along with extra-mural funding) that requires the most consideration for a healthy university-level geography within the state.

Curriculum

1. The role of the general curriculum in light of the institutional mission is discussed in Parts III and IV and is only briefly assessed here. With the exception of UWF, the geography programs provide one of several majors that are truly "liberal arts" (in the holistic meaning of education), and several also provide a more science oriented option (BS degree). The various programs provide very strong service course roles for the institutions at large; indeed, it can be argued that this role is overemphasized in that programs feel compelled to maintain exceptional FTEs in order to sustain themselves. UWF provides a concentrated program in environmental studies that fits well with the size of the staff and the undergraduate "ecological" emphasis within the institution.

2. Unfortunately, insufficient attention was paid to interdisciplinary teaching linkages among the various programs, as opposed to the same role for research. The impressions made and information provided suggest considerable variability by program. UWF and FAU have been active in this vein, joining with other disciplines to create integrative programs of study. The other programs have been less active in regard to formal teaching programs. Much more activity could and should be invested in formal inter-multidisciplinary teaching programs.

3. The various programs maintain research linkages with a variety of public and private institutions. This said, the reviewer was struck by the low level of formality of these linkages and the fact that they tend to be made on an individual as opposed to a program basis. The SUS geography programs, in general, have not been leaders in creating institutional level research activities or in entering them in a major way. Despite the presence of the leaders of research and contract institutes within some geography programs, such as those of the Florida Resources and Environmental Analysis Center (FREAC) at FSU and the international and tropical studies programs at UF, formal programmatic ties with geography apparently do not exist. It is noteworthy that such institutes were apparently not considered sufficiently important to merit serious mention within the self studies. Clearly, the SUS geography programs must carefully evaluate

the nature of these linkages and the value of their involvement with them.

4. Virtually all the geography programs play major roles in university service courses. This is a major strength of the SUS.

5. The need for better balance in the professional roles of the programs or program members is one of the most fundamental recommendations stemming from this review. This issue is discussed at length in Parts III and IV.

6. The quality of the undergraduate programs seems solid, even high quality, but it must be noted that measures of quality are difficult at this level. The quality of the applied MA programs or students focusing on applied fields appears adequate to strong, based on employment data generated. The quality of the academically-oriented side of the graduate programs (as per MA aiming for doctoral programs or doctoral students in the SUS) appears to be adequate but variable with much squabbling among the various programs about the other's inadequacy in "quality control." Considerable attention needs to be given to this issue; but then, the various programs can make a strong case that adequate assistance has not been forthcoming from their administrations that would allow the upgrading of this side of graduate education. With the exception of some very early leadership in remote sensing at FAU, the SUS geography programs have not figured highly in the modern fields of computer graphics,

remote sensing, and GIS. FAU has made advances of late in GIS (but housed within MURP) as has FSU (but housed within FREAC). No program specializes in geographic statistics or necessarily emphasizes those subfields. UF, however, has several faculty members who are recognized nationally for their competence in this area.

Faculty

1. The major issues dealing with the professional development of the SUS geography faculty are discussed in detail in Parts III and IV. In general, these include a need for better balance in activities and productivity by activity; a need to think "bigger" and to engage in national and international level activities; a need to free themselves of such large FTEs in order to devote more attention to other activities; and a need to improve salaries in order that summer school teaching and contract work do not take precedence over programmatic development and research.

2. Publication quality and quantity is solid to outstanding in three of the five programs. Several SUS geographers are noted for their publication achievements. Extra-mural funding throughout the SUS geography programs is undistinguished; it is also not apparent that those holding salaried lines in geography have been important in creating high levels of extra-mural funding within interdisciplinary research institutes. Much improvement is required in this

area. This said, perhaps six or more SUS geographers are quite distinguished scholars and another six are visible figures in the field.

3. Apparently, SUS geography programs have not received one Eminent Scholar position. Awarding several of these to the correct individuals and institutions could potentially elevate the national standing of the SUS programs and assist in the development of the dimensions of geography that require improvement.

Students

1. None of the geography programs noted problems with undergraduate financial support. As detailed later, graduate students support is woefully inadequate throughout the SUS. Stipend levels are low, as is the total number of graduate students supported. If this situation remains, it is doubtful that the SUS geography programs will be able to become nationally prominent in graduate education.

2. Very little information was provided on undergraduate recruitment. The review team did not pursue the issue to any degree, perhaps because by national standards the SUS programs fare well in the number of majors per faculty size. Recruiting at the graduate level is inadequate across the board, although two caveats are noteworthy. First, MA programs only have difficulty in recruiting versus MA-Ph.D. programs, and only one Ph.D. program exists in the state. And

second, the programs are sufficiently disenchanted about their ability to attract top quality students owing to stipend levels and so forth, that an ambivalent attitude towards recruiting is apparent. No information on minority recruitment of graduate students was provided. SUS programs are so situated that active (face-to-face) recruitment of minorities could be undertaken with minimal costs.

3. The demographics of the Florida situation for geography are detailed in Part I. In brief, they are prime for the development of a strong system-wide geography to emerge, both in numbers of programs and quality, not unlike that which exists in California.

Specific Issues

1. The suggested role for geography in undergraduate education has been detailed earlier. Regardless of a BA-track or BS-track, geography can best serve undergraduate education through its holistic and synthesis role commensurate with a liberal arts education. Typically, but variable by institution, this should involve high levels of interdisciplinary work and links with other programs; dual majors are to be encouraged--geography with botany, economics, meteorology, anthropology, and so forth.

2. The SUS geography programs have several means of keeping pace with the technological changes in the field, and each program should strive to implement all strategies. These

are: increasing faculty numbers and making appropriate faculty selections (adding individuals who can teach and do research in the techniques as well as in other topical specialties), demonstrating a training function so that the institution provides the positions and equipment needed, and creating sufficient extra-mural funding so as to provide equipment and software. In general, SUS geography programs have not been especially successful in coordinating these strategies. Administrations must understand the need that the SUS geography programs have for essential equipment and technical expertise.

3. The query about the "proper" role of applied and traditional geography is puzzling in that it is a non-issue at this moment in geography's history.[9] The major programs recognize that the discipline needs healthy contributions in both "traditions." While a program may choose to emphasize one over the other, surely the SUS system should seek a balance in emphases by program or within larger departments. Perhaps a more critical issue for the SUS is that of private contracting on the part of faculty members, which impinges upon the expertise and contract capabilities of the program.

4. Obviously, geography should be involved in various ways in the development of education curriculum and the

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[9]The review team interprets traditional to mean academic-oriented education and "pure" research, and applied to mean professionally-oriented education and policy-oriented research.

training of teachers to insure adequacy of K-12 geography within the state. The actual role taken by any program can and should vary depending upon their institutional mission.

5. The allocation of resources to geography, whether through the number of faculty positions, salaries, staff support, graduate student support, or equipment, is not sufficient to meet the needs of diverse and modern geographical education and research. While such a response may be forthcoming in all disciplinary reviews, it is especially true of geography. In general, geography programs in the SUS are small and ill-equipped by national standards (judged by programmatic and institutional type, of course). The unique roles, attributes, and needs of the discipline are detailed in Part I; these require special attention by the SUS.

A final comment from the review team. The role of community college transfers in the SUS system is large and may have unusual impacts on geography, a discipline that typically attracts majors during the late sophomore and early junior years of education. In this regard, attention should be given to programmatic impacts, if any, on geography majors, course content/number, and so forth, and the means to reconcile them.

PART III

THE STATE UNIVERSITY SYSTEM:

AN EVALUATIVE OVERVIEW OF GEOGRAPHY

Two phrases capture the general situation of the SUS geography programs: variable strengths and insufficient balance. The five programs have considerable variability in terms of institutional missions and effectiveness in meeting them, size, subject specializations, approaches, and attitudes. It is also noteworthy that the central adminstration's understanding and appreciation of the discipline varies by institution. Each program has distinguished itself in some fashion (e.g., high student to faculty ratios, quality teaching, high publication rates), but few have found their way to programmatic balance among the teaching-tutoring, research-publication, and professional activities that make excellence in each.

Owing to variability, it is somewhat precarious to identify system-wide strengths and weaknesses; nevertheless, the lead reviewer is struck by several common characteristics. These are briefly sketched below, remembering, of course, that these general observations may not be applicable to particular programs.

Before proceeding, however, two observations are noteworthy. First, the analysis presumes that the conditions and status of programs are a result both of internal and

external factors. Internal factors are those within the program that, for the most part, must be addressed from within; external factors require investment or assistance from the institution. This review is biased toward internal factors because experience demonstrates that major and rapid changes in the external factors are unusual, that to wait for these changes before attempting improvements is a "doomsday" philosophy which leads a program nowhere, and that without internal improvement, external forces are often ineffective. Second, while the strengths of programs are listed, more attention is given to the "problem" areas--those needing careful attention, monitoring, or alteration for program improvement. This emphasis, it is presumed, is the purpose of program reviews.

Overall, the strengths of geography in the SUS center on undergraduate education and faculty publication. The principle strengths may be listed as follows:

1. Most programs devote large amounts of time and energy to undergraduate instruction. The faculty to student ratios are high for the discipline at large, and in some cases, very high for the institution in which the program is housed.

2. Most program instruction is rated quite highly by student evaluations, as evidenced by site visit interviews, institutional documents, and discussion with administration.

3. Most programs are characterized by overall high grading standards for the social sciences within their respective institutions.

4. Master's degree programs consistently have aimed at filling the training needs for the State of Florida in the areas of urban and regional planning and resource/environmental management.

5. Program faculty have relatively strong publication records, especially given that only one Ph.D. program exists.

6. Program faculty appear to have adequate to high levels of involvement in professional activities and institutional responsibilities.

7. Program faculty have a sense of mission to promote geography within the state, especially in regard to high school and community college education.

8. In part because of the "buyer's market" that now prevails, programs have been able to attract talented faculty, especially in the junior ranks.

Areas that require particular attention and, in most cases, adjustments are those dealing with graduate education, extramural funding, and breaking the bonds of parochial thinking. Specific areas of concern are listed as follows.

1. Overall, the advanced degree programs require attention.

The number of graduate courses provided are too few for adequate training, and the graduate enrollments are low. Considerably more effort--planning, promotion, and recruiting is needed in graduate education. As will become apparent below (number 3), graduate enrollments might be enhanced through a coordinated effort designed to increase the number of SUS undergraduates matriculating to SUS graduate programs.

2. Most geography programs firmly believe that programmatic health and departmental rewards are primarily tied to large undergraduate enrollments. Institutional administrators, in contrast, emphasize that this view is incorrect. Explicit enunciation and understanding of policy and consistent application of it are required.

Most programs emphatically declare that the "real" criterion on which their program has been evaluated within the institution is undergraduate enrollments. Consistently, institutional administrations insist that this criterion has been only one in a broader formula, and that it is not necessarily the fundamental one. The reasons for this discrepancy in views probably vary by institution. Regardless, the impacts on graduate programs (time and effort extended to their promotion and development) and, perhaps, funded research activity are obvious.

3. Graduate stipends, both number and amount, are woefully low by national standards, especially for Ph.D. programs. It is doubtful that top graduate talent will be drawn from out-of-state in this situation; much of the best talent from Florida matriculates outside the SUS.[10]

The University of Florida is probably hurt the most by low stipends, as will be any other program that moves into the doctoral degree field. Nevertheless, many MA programs around the country have higher stipend levels than does the SUS. Geography attracts talented undergraduates to its graduate

[10]A recent but incomplete survey of graduate funding among a select group of Geography doctoral programs indicates the following: (i) usual financial packages for teaching and research assistantships ranging from full-tuition remission, $7,000/academic year and no fringe benefits to full-tuition remission, $12,000/academic year and substantial fringe benefits; and (ii) number of full-time graduate students/fully supported graduate students ranging from 70/40 to 40/25.

ranks--increasingly graduates from other disciplines and from elite foreign and American universities--but the overall numbers of them are small. This makes for strong competition among programs in which stipend levels play a considerable role. It is not even clear that the better BA and MA graduates of the SUS seek doctoral studies within the state at the one available program.

4. Sponsored research--especially grants--is very low, and programs are not adequately benefitting from the equipment and student support that can be garnered from extramural funding.

Nationally, the level of funding available to geography programs is much larger than is commonly recognized, but is variable by branches within the field or the type of geography practiced. Geographers and geography programs successfully compete for grants and contracts from a large array of sources (e.g., NSF, NGS, SSRC, NRC, USGS, USAID, UN, FAO). Funding levels per annum in some programs reach the six figure level. The earth science and Geographic Information Systems (GIS) segments of the field tend to have more funding per capita, although the social science segments of the field can do well in certain areas. The humanistic segments have much lower funding opportunities.

In the SUS, two comments are noteworthy regarding grants. (i) Quality teaching does not equate with excessive teaching

loads, and the latter is taking a toll on grantsmanship.
(ii) Most programs seem not to be predisposed towards grantsmanship (even some that once were are not now), and some faculty appear to be honestly hostile to the notion.

5. Research activities appear to be strongly biased in favor of the "lone scholar" approach; team or group research capable of attracting large grant support and linking the program's faculty internally and externally is weak.

This bias may have an impact on the amount of extra-mural funding; larger research grants and contracts are commonly associated with team-based efforts. Indeed, many of the so-called "cutting edge" research opportunities are inter-disciplinary and certainly inter-subfield, and, therefore, virtually demand multiple faculty endeavors. This type of activity can also act as a catalyst for program cohesion and is typically important in linking the program with other centers within and outside the institution.

6. Formal research and teaching links between geography programs to multidisciplinary research centers and other departments need strengthening.

As noted in Part I, geography possesses few topics of study unto itself, but shares them with a wide range of other fields of study. For this reason, and due to the nature of much geographic research, geography programs and faculty

should be engaged in a substantial amount of multidisciplinary research. Geography programs are typically strengthened by formal ties to other programs, especially integrative research centers. SUS programs have a variable record here, and many "ties" appear to be informal faculty-to-faculty relationships rather than on-going, structured activity.

Likewise, multi- and interdisciplinary teaching efforts should be encouraged. Given the nature of geography, the range of possibilities here is large indeed, including possible links with the earth sciences, social sciences, humanities, and such interdisciplinary programs as Area Studies, Planning, and so on.[11] Surprisingly, resistance to such linkages was found outside of geography in several SUS institutions.

7. Faculty salaries are rather low and probably are not adequate to retain those not committed to Florida; talented junior faculty may be difficult to retain because top programs in the country tend to focus their hiring efforts on them.

This may be a general SUS issue, but several observations are warranted about the health of geography programs. Salaries are low by national standards. The problem is even more acute in the southern part of the state due to the cost

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[11]At this reviewer's institution, geography links in formal teaching programs with biology, international development, environment and technology, psychology, and even art.

of living. Moreover, geography is a field that remains "open," especially in the mid-junior ranks--increasingly the better U.S. programs tend to hire junior faculty who have "proven" themselves elsewhere--and the low salaries in the SUS may not bode well in retaining the top talent in this rank. Another issue worthy of investigation is the impact of low salaries on the propensity of faculty to teach summer school to supplement income rather than to engage in grant related research. The review team lacks the information to assess this issue, although it appears that an unusual amount of summer teaching is conducted by main-line faculty.

8. Only two females hold tenure-line posts in the SUS programs.

Although few minorities (of American origin) are available in geography, the number and quality of female talent is substantial and growing annually. No explanation is needed here. While the number of females that may apply for a position is small compared to males (because of sheer demographics), vigorous searches can usually identify top quality female candidates.

9. While all programs appear to serve their regional missions well, some need to begin to think more nationally and internationally in scope and visibility.

With a few exceptions, SUS geography programs appear to undervalue their talent and ability to compete beyond their institution and state. Thinking appears to be parochial, as if programmatic roles begin and end only within their regional setting. Isolation from the national and international scene, and diminished visibility within the geographic community at large are potential consequences of such thinking. This issue was captured by one administrator who noted that geographers in Florida must "begin to think big."

10. Regardless of degree status, programs typically are low in faculty numbers by national standards for quality institutions.

While exceptions exist, most highly regarded doctoral and masters programs maintain tenure-line staffs in the range of 15-20 and 10-12, respectively. This size is required to offer the breadth of study needed at the undergraduate level and to provide several foci of specialization at the graduate-research level. The geography programs of the SUS fall below these figures, some drastically so.

A comparison of the list of strengths and the list of areas requiring attention indicates that the general goal of most of the SUS geography programs should be to seek a better balance between undergraduate and graduate components, publication and funded research, departmental and formal interdepartmental linkages, and state and national/

international interests. Almost every program could seek a better balance among its teaching, research, and professional/ administrative responsibilities.

Two observations are offered towards an understanding of the current situation or level of balance. The first involves the changing missions of some of the institutions, and the second involves the understanding of the breadth of teaching needs of geography. In regard to the first, it is clear from faculty composition and comments that the missions of many of the institutions and/or geography programs have changed during the tenure of many individuals. The missions have changed from one focused primarily on teaching to one that is more consistent with a research-oriented university. Such a change invariably is associated with tensions among those members who have devoted their careers to liberal arts education and those who seek a greater graduate-research role. For the most part, it appears that the various programs are handling this tension in a healthy way.

In regard to the second, considerable variability by institution is evident in administrative understanding of and apparent interest in geography. This said, it is recognized that administrative interest is commonly associated with the vitality of a program and its level of creative interests and development. Nevertheless, it is not clear that all administrations aspiring to have comprehensive geography programs understand the unique qualities and needs of them and the

important roles that they can serve within an institution. It is also not clear that the geography programs have consistently demonstrated their case effectively. As a consequence the discipline is a small one throughout the SUS that commonly functions in a service capacity.

PART IV

INDIVIDUAL PROGRAM EVALUATION

The order of presentation is alphabetical. As in the case of the system-wide assessment, the areas requiring improvement are emphasized.

FLORIDA ATLANTIC UNIVERSITY

Bachelors in Geography

Masters in Geography

Masters in Urban and Regional Planning

The geography program consists of 5.5 tenure-track faculty (all posts filled but a resignation and search pending in 1989) with an additional 3 faculty lines (2 posts filled) in Urban and Regional Planning. FAU offers a master's degree in geography and is intimately involved with the Masters in Urban and Regional Planning (MURP), which is housed in the Fort Lauderdale campus of FAU.[12]

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[12]At the outset of this review MURP was administratively housed within Geography, and much of the site visit discussion in regard to MURP centered around eventual restructuring. In the latter stages of the review this restructuring took place. This final draft report reflects that such restructuring has occurred.

STRENGTHS

1. Strong publication record. Virtually every faculty member has sustained a record of research and publication that is excellent for a small, masters-level program. Their work has reached the better journals of the discipline.

2. Strong teaching record. The program has been innovative and aggressive in developing an instructional program ranging from service to graduate courses. For example, it was an innovator in the research and teaching of remote sensing. Teaching loads and the quality of instruction are high.

3. Master of Urban and Regional Planning (MURP). Geography was instrumental in the development of this program, from its inception to its current state. This is precisely the kind of interdisciplinary creativity essential for the success of geography programs that has been underdeveloped in the SUS.

4. Strong institutional linkages. The program sustains close research and teaching links across the Social Science College, but especially with Economics, Political Science, and the Joint Center for Environmental and Urban Problems.

5. Program behavior and respect. For the most part, the program functions well and the faculty are respectful of one another. It is also strongly valued by the other social science programs at FAU. Moreover, the faculty have been quite active within the service component of the institution.

6. Administrative understanding. Several members of the administration are intimately aware of the role that geography can and should play in the institutional setting and apparently have supported the program fairly within this context. (This said, many of the problems confronting geography are those that stem from the institutional setting; see below).

AREAS OF NEED

1. Overextended efforts based on size of program. The program aims to cover the breadth of the discipline with no more than half of the faculty numbers needed for such coverage. This self-imposed policy--true to a liberal arts institution--is combined with teaching requirements at two branch campuses and other duties that place unusually heavy demands on the faculty by most any measure. The effects on other essential activities, such as major constraints on time for research and extra-mural funding, are undoubtedly significant.

2. Underdeveloped geography MA. The graduate program in geography (as opposed to MURP) requires attention. It is unfocused, apparently attempting to mimic the undergraduate "breadth" (excluding physical geography) but lacking the faculty size to do so. This almost invariably leads to inadequately prepared graduates. Stipend levels and graduate support in general are poor, and the numbers of masters level

students and MA graduates are low, although it is apparent that a demand for advanced degrees exists.

3. Low level of extra-mural funding. The program has a record of extra-mural funding that was once relatively strong but has dissipated of late. The reasons for this decline were not explicitly articulated, although two contributing factors emerged in other discussions: (i) the faculty view that individual and program rewards are tightly linked to faculty-student ratios and not necessary to recognition of external funding; and (ii) the overextended responsibilities of the program in general.

4. Inadequate vision beyond the Masters in Urban and Regional Planning (MURP). The program has not thought through graduate-level linkages and areas of focus other than MURP. Especially in regard to research and graduate training, the program requires one or two other areas of programmatic strength, and given the faculty size, this strength most likely will be found through institutional linkages and cooperation.

5. Long-term vision of the Masters in Urban and Regional Planning (MURP). The needs of MURP, including accreditation and identification of tenure and promotion requirements for a professional program, must be balanced with the developmental

role of geography and economics in establishing this program.[13]

6. Retention of Geographic Information Systems (GIS) component in geography. Computer graphics and GIS are essential training and research areas in modern geography. FAU has excellent facilities, but they are housed in the Fort Lauderdale campus in conjunction with MURP. This physical separation from the geography department at the Boca Raton campus raises serious questions about the long-term involvement of geography in the teaching and research area, and access to the equipment, in that it is doubtful that duplicative hardware will be provided at the Boca Raton campus. The effect of the direct line connecting the computer at the Fort Lauderdale campus with the Boca Raton campus should be monitored.

7. Very low faculty salaries. Salaries are not only low by national standards for geography; adjusted for the cost of living in southeast Florida, they might be described as poor. It is not clear that salary levels are sufficient to attract high quality, new talent to the faculty, and they are certainly incommensurate with the quality and productivity of the present faculty. This situation may promote non-institutional (personal) consultancy work rather than academic

[13]It is noteworthy that the strongest negative sentiment expressed about the possible separation of MURP from its social science origins within the institution came from economics. This implies that decisions about MURP will have repercussions that extend beyond geography.

research or institutional grants.

8. Resolution of reward system. A few individuals expressed concern over the internal evaluation of merit, suggesting that the criteria and means of assessment are not understood by all. A larger issue involves the perception by a larger number of faculty members that institutional evaluations and rewards are strongly tied to FTEs. This view, as mentioned previously, is not necessarily held by the administration.

9. Role of adjunct faculty. It is difficult for programs to meet their teaching needs and enforce quality standards when a large number of courses are provided by part-time individuals, in this case, the prevalent use of adjunct professors. The institution must assess the overall impact of this situation.

10. Lack of long-term planning. It is not clear that the program has established a future agenda by which it can measure its development and make decisions in the future.

SUMMARY

This program has displayed exceptional balance among the roles that a healthy geography program must serve, especially given its small size and youthful institutional setting. The program has a healthy student enrollment, engages in good levels of published research, is active professionally across campus, and has been a leader in developing interdisciplinary

programs. Its needs center as strongly on institutional issues as they do on internal program issues, including the long-term development of MURP and faculty salaries. Internally, the program needs to plan for its future through focusing its own master's program and areas of specialization, and redeveloping its extra-mural funding efforts.

RECOMMENDATIONS

1. The program needs to define and focus its teaching and research efforts. This need is particularly strong at the geography master's degree level and for future direction and hiring within the program. The areas of strength should be developed with an eye towards complementarily with other units within the institution. Given the geography program's strengths and those current or emerging within the institution, two foci are recommended for consideration: locational analysis and urban-economic geography; and physical and environmental geography strongly linked to GIS and remote sensing. The former area fits well with current faculty strengths and complements MURP and other units; the latter areas merge and expand program strengths to complement geology and the needs of the institution and region. This second focus would also expand undergraduate teaching in earth science geography, a subfield that has been deliberately de-emphasized by the program in the past. Both areas should blend well with the Joint Center for Environmental and Urban Problems.

2. Clarification and strengthening of the geography MA is needed. This direction, of course, follows that outlined above. Beyond the specialties, however, more depth in course work and critical mass in student numbers and interests are required. Vigorous and innovative recruitment strategies would prove useful, especially if coupled with increased student financial support.[14]

3. Increased efforts to obtain extramural funding are essential. The rewards for the graduate program are obvious here. But as important is the need to increase faculty research time and to link in joint research efforts as part of a group and/or with other research units, both on and off campus. "Funding" should be interpreted liberally to include local gifts and other support to the program.

4. Realistic long-term plans for MURP must be developed. MURP plans should aim for the earliest possible accreditation. The real issue is to develop and nurture an autonomous professional planning curriculum, faculty, and student body that functions interdependently with other FAU units. Attention

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[14]This review focuses on the larger or broader issues and qualities of the programs, rather than specific ones. The review of the FAU program pin-pointed several specific undergraduate issues that are noteworthy. Here the program needs to consider establishing internship and co-op programs, field courses, and a research methods course. Better involvement of students through national programs is possible, such as initiating a Gamma Theta Upsilon chapter (national geography undergraduate organization). Also, the institution should address the pros-and-cons of inter-campus course work; in some cases, apparently, all the students for a particular geography course and the instructor are located at Boca Raton, while the course is conducted at Fort Lauderdale.

should be given to strong linkages with geography, economics, and, of course, the GIS component housed within MURP.

5. Development of evaluation criteria and nurturing plans for MURP is essential. MURP, as a professional program, needs its own set of merit and promotional evaluation criteria, including review guidelines, peer journals, and so forth. It must be recognized that MURP faculty are planning program educator-scholars, not geography program educator-scholars. Even with the appointment of a director of MURP, care must be taken to nurture the junior faculty so as to achieve high quality standards and academic performance.

6. Institutional priorities and reward system need clarification within the geography program. The program must be informed explicitly and shown by example that FTEs are not the sole or necessarily the most important criterion for individual and programmatic evaluation and reward.

7. Faculty salaries must be increased. Morale and attitudes toward the institution will remain low if positive changes are not made here. The rewards to the institution may be felt through the shift from "personal" activities (consultancies) to activities which directly benefit the program and institution.

8. Faculty vacancies should be filled and growth in the program should be considered. Replacements must be made with due consideration given to the current and future areas of program strength. Given the innovative and respected role of

the program within the institution and its teaching and publication record, a strong case could be made for program growth, especially if it is coordinated within the larger plans for institutional strength.

9. The program would benefit from the exercise of developing a long-term planning document. Using this current review process, the program should provide a rudimentary outline for its future goals and means of achieving them. The issues noted above should be addressed. The administration should encourage--and the program faculty should strongly consider--"bigger thinking;" that is, planning towards goals that envision the program beyond the institution and region.

A final comment is warranted about FAU's structure that affects the mission of geography. It appears to this review team that both education and scholarship are negatively served by stretching the time and efforts of a small-sized department across campuses. Quality education and scholarship is fostered, in part, by a functioning unit that can draw upon its locational-based assets and relationships (e.g., use of faculty expert x in faculty y's class; collaboration on research topics). Such activities are impeded where faculty are "on the road" or working elsewhere.

FLORIDA STATE UNIVERSITY

Bachelors in Geography

Masters in Geography

The Department of Geography, Florida State University, is a nine faculty-line, masters level program (eight posts filled and one half-time post on phased retirement). Its programmatic focus, in addition to a well-rounded liberal arts curriculum, includes the spatial aspects of economic growth, human-environmental relationships, and geographic techniques.

STRENGTHS

1. High levels of undergraduate teaching and enrollments. The program has the second highest FTE in its college, while apparently maintaining relatively high grading standards. Senior faculty have carried a course overload in order to ensure large enrollments while not over-burdening the junior faculty. This is a rare situation indeed.

2. Overall excellent publication record. The level of publication is, perhaps, exceptional for a masters program with such a heavy total teaching load. The citation record is also above average for geography and the social sciences in

general.[15] These records are achieved, however, with rather considerable variation among the faculty.

3. Good levels of professional activity and faculty reputations. The faculty are professionally active at local, regional, and national levels, and several are considered major figures in the field at large and within their topical specialties.

4. MA students employable. The applied focus of the masters program, and the contacts of the program and the institution have created a situation in which many students find employment before completing degrees.

5. The Florida Resources and Environmental Analysis Center (FREAC) as an important research-contract linkage. Few geography programs in the country have such a well-equipped research-contract center housed within their midst, although it must be recognized that FREAC is a free-standing unit within the Institute of Science and Public Affairs.

6. Leadership. The leadership of the program is admired by the faculty, and a collegial manner of decision making that has been lost in much of academe prevails, at least among those faculty who are the decision makers.

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[15]FSU was the only program to provide citation data from the Social Science Citation Index. While this information was not required by the SUS, it is generally considered critical information elsewhere. Indeed, such information is used for decisions in promotion and tenure, as well as departmental evaluation. Geography programs typically include information from the Science Citation Index and the Arts and Humanities Index as well.

7. Ability to attract good junior faculty. The program has identified and attracted good junior faculty, including one of only two tenure-track female faculty members in geography in the SUS.

AREAS OF NEED

1. Small number of faculty. With only eight tenure-track faculty, it is difficult to provide the breadth of courses required at the undergraduate level, and the depth of course work and tutoring required at the graduate level.

2. Small number of graduate students and courses. The advanced course issue is directly linked to the undergraduate emphasis and to the number of graduate students available for instruction. The low numbers of graduate students undoubtedly reflect the level of attention given to the development and promotion of the advanced degree program and to the issue of extra-mural funding and graduate stipends.

3. Low graduate stipends and number of graduate students. The Department can document that students offered stipends are accepting positions for much larger financial packages elsewhere.

4. Low levels of extra-mural funding. While a systemwide problem, individuals of this program expressed unusual levels of misgiving and even condemnation of the role of extra-mural funding. Misgiving was expressed regarding institutional facilitation of grants and the reward structure for receiving

them. Condemnation of grants as "anti-scholarship" was also expressed by some. The latter involved both the healthy notion that the availability of funding should not drive research and the unhealthy implication that funded research is axiomatically suspect.

5. Resolution of private contracting. While not raised as an issue by the program, the ability of faculty to channel contract funding privately, rather than through the program or institution, is quite apparent. Presumably, the institution and program lose overhead, fringe benefit payments, and other monies that can make a difference over the long run to the equipment and student support within the program. While it is recognized that there are often valid reasons for private contracts, the program should examine this issue, particularly for those contracts falling within the defined agenda of the program or institution.

6. Underdeveloped "symbiosis" of the Department of Geography and the Florida Resources and Environmental Analysis Center (FREAC). It is recognized that FREAC and the Department are independent units, that the two cooperate in a number of ways, and that the linkages between them are apparently mutually agreed upon. The issue of note is that the advantages of one to the other could be significantly enhanced in a number of ways that would be mutually beneficial. For instance, the department should promote better its association with FREAC and its facilities as a means of

attracting graduate students; more quality graduate students would provide research assistants for FREAC. Geography has the faculty to train students in GIS but does not have the equipment; FREAC has the equipment and can use trained assistants for various projects. It seems reasonable that some form of quid pro quo could be arranged in this regard. Other examples could be provided.

7. Inadequate equipment for instruction. Following from above, the program has insufficient computer and other equipment to train students in computer cartography, GIS, and other such aspects of geographic education. It has the personnel to provide the training, however.

8. Underdeveloped formal interprogram linkages. Geography appears not to take sufficient advantage of potential teaching and research linkages throughout the institution--linkages that are a hallmark of the discipline. This said, the institutional setting does not necessarily seem conducive to such linkages, perhaps creating a poor atmosphere for such efforts. Some program representatives (chairs) from other disciplines questioned the rationale for linkages, and admitted that they had not sought them; others insisted that they had sent out "feelers" to geography but had not received a response. Interestingly, some geographers have experienced the same response to "feelers" that they have placed.

9. Improvement of institutional facilities. The program claims that it is difficult to obtain the use of sufficiently large classrooms. Concern was also expressed in regard to accessing computers and other research facilities.

10. Improved understanding of mission. Program faculty strongly assert that undergraduate enrollments drive the reward system of the institution, or at least this is the lesson that geography has learned. A prime theme is that the program has maintained itself precisely because of its strong teaching role, which includes the development of a large number of courses with large enrollments. The schism in expectations and evaluation criteria between the administration and the geography faculty must be resolved.

11. State of program and its direction. Several healthy tensions exist among the program members--healthy in that they appear to be open to discussion by a faculty sufficiently cohesive and respectful so as to facilitate resolution. These tensions involve moving the institution from an undergraduate teaching mission to a comprehensive graduate university. Such a move commonly finds differences among faculty based upon the conditions and missions under which they were hired. In large measure, the program's faculty recognize the trajectory that the program must take, but perhaps disagree on the measures by which the goals should be met. This involves such issues as teaching loads, rewards for extra-mural funding, department

decision-making, and so forth.[16]

All of the issues noted above have culminated in a masters program that requires attention on all fronts. Despite the ability of MA trained students to find jobs and the apparent demand for them, their numbers are small and the structure of their program is unfocused.

SUMMARY

The FSU geography program is a very hard working and cohesive unit, by almost any standard. It carries an exceptional teaching load for a masters-level program, has high levels of publication, has several highly visible research and contract faculty, and continues to hire able young scholars. Moreover, the presence of FREAC and other such institutional centers adds to geography's strength. Geography aspires to doctoral status and certainly is housed within an appropriate institutional setting to facilitate that move.

The potential of the program is considerable, either at the masters or doctoral level. To reach this potential will require understanding and assistance from the institution, and adaptations of the program to the style that marks major

[16]Again it should be reiterated that the distinguished efforts of the chair are appreciated by all, and everyone remarks on the remarkable fairness and democracy that prevails. On the other hand, following the institutional internal review of the program, perhaps more formality and committee structure (albeit unfortunately) is needed as a mechanism to groom the new leaders of the program, much needed if the program is to grow.

research-advanced training programs. This involves increases in the graduate program and related activities; seeking a balance among undergraduate and graduate teaching, publication, and extra-mural funding; improving the number and level of graduate stipends; taking better advantage of the mutual relationships with FREAC; better promotion of the program and its strengths; and simply thinking "bigger" and acting more aggressively at the regional and national scene. With strategic planning and coordination, the program has the potential to obtain national prominence.

RECOMMENDATIONS

1. The program must reduce its course load. While differential course loads may be warranted, a six course load obviously carries impacts that have been manifested in the graduate program and extra-mural funding. To accomplish this goal without diminishing the FTEs too much, the administration should assist the program to find larger rooms for course instruction, and the faculty should be willing to teach in other buildings, if need be. Also, the program should review the large number of course offerings, and reduce the number of elective courses offered at any one time.

2. The graduate program should be restructured. This will require planning of all facets, from recruiting to advising to course offerings. Stipends must be increased in number and amount, and the number of semesters of eligibility

for funding should be extended to four. In addition, better promotion of the program is required.

3. Extra-mural funding must be increased, and several related issues must be addressed. Faculty should be encouraged to seek grants and contracts, the benefits of which should accrue through individual and program visibility, program equipment, and graduate student support. Means of improving the benefits that can be mutually derived from an optimum FREAC-geography relationship should be explored. The role of private contracting also should be addressed, particularly where it may conflict with institutional arrangements.

4. Improved computer facilities are required. The program has the faculty to train students in computer cartography and GIS, but does not have the equipment. This equipment must be supplied and/or arrangements made with FREAC or some other institutional unit to provide access to such equipment. Equipment within the program is preferable because of its use for student training.

5. Improvement is needed in formal teaching and research linkages with other programs. The faculty should be encouraged to seek appropriate teaching and research links with several of the institution's interdisciplinary programs of study. Geography should not operate as an isolated unit when it has appropriate expertise for these interdisciplinary programs.

6. Additional faculty lines are warranted. Indeed, at least 3 or 4 posts will be needed to reach the minimal size required for a more effective graduate program--one of which this program and institution are deserving. If possible, one line should be reserved for a more senior individual with a proven grants record. MA programs of the kind that FSU aspires to typically have a minimum faculty of twelve. FSU's program has nine.

7. The Geography Department and FREAC need to develop more formal ties. A greater degree of articulation and the sharing of resources between FREAC and the Geography Department will be mutually advantageous.

8. A program development plan would be most useful. It appears that the geography program has been able to sustain itself by way of "collegial understanding," an attribute of its past size and homogeneity. While this mode of operation is admirable and should not be lost, it probably should be balanced by more formality in structure. In this case, the program should identify its goals, the means by which they will be achieved, and develop a schedule of achievement. Included should be an assessment of voluntary retirements and the means by which the institution could assist the program in expediting timely replacements. The program should attempt to keep its strong attributes (publication record) and improve upon other critical ones (graduate program, grants). The planning document should represent "big and creative

thinking"--that is, how to raise the program's institutional and national stature--and should be pursued aggressively. The administration should encourage this type of thinking.

UNIVERSITY OF FLORIDA

Bachelors in Geography

Masters in Geography

Ph.D. in Geography

The Department of Geography, University of Florida is the sole Ph.D. granting program in the SUS and the State of Florida. It has 12 faculty lines (11 of which are filled) that range the breadth of the discipline; its strengths, however, are in the studies of space-society and human-nature branches of the discipline.

STRENGTHS

1. Number of highly visible faculty members. The program has several members possessing high professional stature that continues to grow, such that their potential appears to rest among the academic elite; several other members have records and career trajectories that mark them as, or becoming, major figures within the discipline.

2. Outstanding publication productivity. On a per capita basis, few programs can match the publication rate of this one, particularly in regard to books. Faculty publications appear in premier multidisciplinary and disciplinary journals.

3. Outstanding institutional setting. The international reputations of several of the institution's interdisciplinary research centers and the outstanding map library (housed in the main library) provide special research opportunities for geography. Joint activities between the centers and geography have taken place.

4. Ability to attract highly recruited junior faculty. The series of appointments over the tenures of the current and past chairs have been made from an exceptional pool of talent and have focused on individuals with strong "on-paper" credentials.

5. Apparent strong support from the past administration. This is attested to by the restructuring of the program and the assistance given in ushering in a bevy of new talent, while retaining the best of those present during the restructuring.

AREAS OF NEED

1. Apparent low level of departmental cohesion. It is unusual to place such an issue first in a list of this sort, but in this case, no other factor looms so large as a potentially divisive force that could inhibit the program from reaching a rather lofty ranking. The level of cohesion appears to be a product of at least three factors: (i) a two-tiered, class ordering of faculty--those that "teach" and those that "write" (albeit such classes are never exclusive

and exceptions exist); (ii) major disagreements about a proper course for the program to follow that ultimately translate into disagreements over a large number of issues, leading to a reduction in group activities, including faculty meetings;[17] and (iii) an internal structure that "leaves it all" to the chair--a sure way of leading to early "burn out." (But see notes below on chair.)

2. Unusual professional routine. For a variety of reasons, a majority of the faculty have developed a routine in which their presence within the department on a daily basis is quite minimal; indeed, the total faculty time spent in the department is exceptionally low.[18] The rationales for this behavior include the ability to pursue unhindered work at home, resulting in high levels of publications, and inadequate facilities within the department, such as the few personal computers in faculty offices. Regardless of the reasons, the impacts of this behavior are much greater than many of the

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[17]Faculty meetings are held to a minimum, in part, because the majority of the faculty do not wish to subject themselves to the strenuous confrontations that apparently occur with regularity. The crux of the confrontations involves strongly held views about the type of geography and related issues that the program should pursue, in which a minority--in some cases, one individual--disapproves of the path and many of the decisions that the program has taken. Differing opinions of this type are healthy if they lead to open and respectful dialogue; in this case, the minority opinion is perceived as antagonistic and disruptive.

[18]It is not unusual for one or two faculty members of any program to restrict severely the amount of time in the department. It is quite another issue to find so many faculty who do so.

faculty apparently realize. It leads to a "dead" atmosphere within the program and inhibits faculty interactions of all kinds, and it "dumps" all spontaneous activities (e.g., the unannounced arrival of a graduate student candidate) on the few who are present regularly in the department, especially the current chair. But most importantly, it greatly inhibits student access to faculty. Undergraduate students forcefully asserted that it was extremely difficult to see many geography instructors; no matter how good they were in the classroom, contact beyond that formal setting was excessively restricted. This issue affects the graduate students as well, some of whom have only minimal contract with their teachers and advisors. Indeed, the ability to convene student committees seems to be hindered by the insistence of some faculty not to appear in the department at certain times. Graduate students rather uniformly noted that advising and tutoring from their "mentors" (other than the graduate advisor and several other faculty) was not a strength of the program. It was singularly surprising to hear some faculty voice opinions that this issue--time on campus--was not a problem.[19]

3. Low levels of extra-mural funding and activity. This is a faculty capable of providing rather rich rewards to themselves and their program by way of grants and contract

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[19]Students praised the chair, and the undergraduate and graduate advisors for their availability and the amount of attention that they received from them.

sponsored research through which graduate students can be funded and equipment supplied. But again, an attitude has developed that has diminished this activity in terms of its importance. Related to this is the dominant "isolated scholar" approach to research; team-based or group research that typifies much of the social sciences today, that can lead to large levels of extramural funding, and that can generate intra- and interdepartmental and institutional linkages is largely absent. The program "suffers" accordingly.

4. Pursuit of outreach activities and linkages. The positive linkages of the program not withstanding, much more can be done to create formal research and teaching linkages outside geography. Current relationships appear to be strongly based on individual rather than programmatic associations. As an example, there appear to be no strong ties to urban planning and its computer graphics/GIS capabilities. Also, as the flagship program of the SUS, UF geography should take the lead in promoting geography throughout the SUS and the state. Several faculty have contributed in this vein, but the program as a whole has a very weak relationship with the other SUS programs, so much so that those programs openly stated that they do not steer their better students to the UF geography program. For their part, some UF geographers openly stated that they were not interested in promoting relationships throughout the SUS.

5. Program research identity. While most major graduate programs of geography are comprehensive, offering breadth of the field, they also have clear identities as per research areas of specialization--two or three areas in which several well regarded scholars offer advanced course work and research opportunities for students. It is not clear that this program has reached this level of specificity; the program's internal assessment did not identify specialties. There appears to be a view that the identity of individual faculty is sufficient for the identity of program strength; this view is only partially correct.

6. Small number of graduate students and poor graduate support. As noted above, these problems are interconnected. Stipend levels throughout the SUS are very low; this program cannot effectively compete for the top graduate talent in the country or elsewhere with such low levels of support. Moreover, a major doctoral program must have a critical mass of full-time students; it is not clear that this program has a critical mass. Again, issues of aggressive recruiting, obtaining the very best students from the SUS, relationships with other programs, and other issues discussed in this section all have an impact on the size of the graduate program.

7. Insufficient equipment. The program is sorely in need of computer graphics and GIS equipment for both research and teaching needs. Modern cartography simply requires this

training. It is also difficult to understand why a major "research" program has so few computing facilities within the department and offices of the faculty.

8. Absence of women and minority faculty. No explanation is required. (See comments on SUS in general.)

9. Small size of faculty. While the program is the largest in the SUS, it is low in the number of members compared to major doctoral programs. This has at least three impacts at the graduate level. It constrains both the breadth of research that can be offered and the strength of research clusters present. Finally, in this case the small size of the faculty translates into a small number of individuals highly active in research compared to other major doctoral programs. Average productivity indicators are influenced by a small set of highly productive research-oriented faculty.

10. Administration's view. It is not clear that the current administration fully understands or values the role that a well integrated and vigorous geography program can serve within a major research institution. Geography must assist in clarifying this role by discussion and action.

SUMMARY

Of all SUS geography programs, none has as many advantages and such a range of opportunities as does this department--a comprehensive and rich institutional setting, a system that clearly rewards research and graduate education, the largest

SUS geography program in faculty size, the only SUS geography doctoral program, and a number of highly visible scholars. It is recognized that the program has taken advantage of this opportunity in the recent past, primarily through a shift from an undergraduate to a graduate focus, and the resulting hiring decisions that followed. The program is literally "setting on the edge" of becoming a very good, if not major, graduate program by national standards. With proper guidance and institutional support, it could very well enter this realm in a major way. This probably will not happen, however, without resolution of some of the problems noted. Primarily, the program must pay much more attention to planning, successfully deal with the tensions among some faculty members, and seek a greater balance in attitudes and views about the nature of teaching-tutoring and research within a major research institution.

RECOMMENDATIONS

1. The program must improve its cohesion and alter its daily routine. This is almost totally an internal issue that the program must begin to address directly. The longer that specific steps and measures are not taken, the greater the probability that the problems will become worse. Perhaps a faculty retreat is needed in which the issues can be aired. The attitudes and behavior of a few must not be allowed to be so disruptive as to affect the functioning of the program in

terms of regular meetings and planning. As importantly, the faculty must address the need to be physically present in the department more frequently and in greater number. The UF geography department must realize that the sum of a program is more than the simple addition of the publication productivity or professional visibility of its members.

2. The program should develop a "5-year plan" to address its long- and short-term goals and means of achieving them. This includes the identification of research foci, discussions of the reasons why it has failed to hire women or minorities, and the means by which improvements can be made in the areas noted below.

3. The program should promote aggressively formal linkages and outreach efforts. Ideally, each member of the department should be linked to one of the research centers on campus and engaged in joint research efforts with them. The flagship and only doctoral program in Florida has the responsibility of promoting graduate level geography within the SUS and the state.

4. Considerable efforts should be given to improvements in extra-mural funding. Ideally, faculty clusters should be developed that, joined with others on and off campus, seek major research efforts that cast the program as well as individual faculty into the national limelight. Of course, all types of extra-mural funding should be encouraged.

5. Graduate student numbers and stipend levels must be increased. The stipend issue requires institutional and departmental efforts; the latter in terms of extra-mural funding. Much more aggressive recruiting within and without the state is required, especially focusing on institutional strengths, such as research centers. Promotional materials are important here.

6. Departmental equipment must be improved. This includes basic computing stations and improvement for training in computer cartography and GIS.

7. The number of faculty posts should increase. If the SUS is to have only one Ph.D. program and wants one that can clearly be competitive among the elite research programs in North America, then for the various reasons noted throughout this report, the UF program must grow in size, to no less than 16 posts, but preferably more. A departmental review should determine if these posts should be used to strengthen present research breadth.

8. The administration should seek to improve its understanding of geography and the role that it plays in major research universities. Perhaps discussions with such programs or key administrators in such institutes, especially geographers, would be beneficial.[20]

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[20]Possible contacts here are Professor David Ward, Vice Chancellor, University of Wisconsin-Madison, or Professor Saul Cohen, ex-president of Queens University.

UNIVERSITY OF SOUTH FLORIDA

Bachelors in Geography

Masters in Geography

The Department of Geography, University of South Florida, is a small MA-level program, consisting of 5 tenure-line posts (of which four are filled, including an incoming chair). Its programmatic strengths have resided within its general liberal arts education and training for applied planning and management work through internships. It is noteworthy that this program was nearly closed by the previous administration but will embark upon a new era of "growth" on the arrival of a new chair.

STRENGTHS

1. High levels of undergraduate teaching and majors. The faculty have dedicated themselves to undergraduate teaching, creating an atmosphere akin to that expected in a private liberal arts college. A large number of courses are offered and students taught, and in the very recent past the program had one of the largest number of undergraduate majors in North America (between 125-150).

2. Dedication to undergraduate students. The faculty receive very high marks for the amount and quality of time and energy given to undergraduates outside the classroom. More

than one student remarked that he/she transferred to geography because the program was one of the few that they encountered which was truly dedicated to undergraduate teaching and that, for the most part, the teaching was excellent.

3. Strong internship program recognized by local employers. Again, in the recent past, this program provided undergraduate and graduate students with "hands-on" job experience relevant to their major--mostly in environmental management and urban planning. The first eleven interns in their program found employment in this manner. The employers--government programs, advocacy groups, and law firms--speak highly of the "synthesis" abilities that these interns have provided.

4. Climate/meteorology laboratory. The program houses one of the most elaborate, if not modern, meteorological and climatological facilities of any geography program in the country. This facility and its coordinator provide one of the finest undergraduate training programs of its kind anywhere.[21] This facility was apparently "pieced together" by the coordinator with minimal financial assistance from the institution. In many instances, the equipment is literally held together by the ingenuity of faculty in charge.

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[21]Note that superior facilities are usually found only within major meteorology departments, and these tend to be almost solely graduate oriented.

5. Commitment to the discipline. It is all too easy for an extremely small program to succumb to the pressures of a hostile administration and give up the struggle for survival. The faculty of this program are to be commended for their strenuous efforts to save geography--a commitment found lacking in some of the more distinguished graduate programs throughout America.

6. New, supportive administration and new chair. The new President, Provost, and Dean have arrived from institutions that have strong geography programs or that built new programs. This provides an administration that understands the role that the discipline can and should play within the mission of the institution, and the level of production and range of activities expected of such a program. Importantly, a new chair (hired from outside the institution) has the opportunity to build upon the strengths of the program and address its weaknesses.

AREAS OF NEED

1. Small faculty. MA-level programs simply cannot function properly with five individuals, no matter how many adjuncts and visiting faculty are employed. Moreover, the undergraduate FTEs are too high, as are the number of courses, for this number of faculty.

2. Tension over institutional mission. The geography program apparently understands that the mission of USF, at

least as interpreted by the recent administrations, has moved towards that of a comprehensive university. Despite this recognition, some of its members are of a different ilk--that of the consummate liberal arts teacher. The tension results from the perceived treatment of the program in the recent past: "punishment" for being outstanding in the teaching category. It may be that some program members will not be able to shed this perception easily or will be unable to move into a more balanced professional mode as per the move of the institution. It is not necessary that all members of a program function identically. It is a truism that most programs in most universities are composed of faculty who emphasize teaching, research, or administration over a balance among these activities. What is important is to reward faculty properly for the roles that they perform well.

3. Weak research, grants, and publication record. In part this situation is a product of the mission that some members of the program have identified for themselves. Most of the faculty do publish--one has an excellent record--but the level of research in general, as indicated by publications and grants, is low by the standards of graduate programs.

4. Overloaded course schedule. The program attempts to offer too many courses, especially courses with a four credit designation. The effect is to diminish attention at the graduate level and to provide less time for the faculty to fulfill other functions, such as formal advising of

undergraduates and research. There appears to be little rationale for maintaining four credit courses that do not require a laboratory section.

5. Structure of graduate program. The focus of the graduate program--aptly identified as planning and management oriented--is inconsistent with the predominant course offerings that follow a general liberal arts structure. The advanced depth of graduate offerings is insufficient, as is important training in quantitative methods, computer cartography, and so forth.[22]

6. Inadequate computing and cartographic facilities and equipment funding. The program has not remained up-to-date in regard to computing. Cartographic hardware and software are required for graduate studies and are highly recommended for undergraduates as well. Critical GIS equipment is lacking, as is a functional cartographic lab for training and research. Moreover, apparently minimal funds have been extended to maintain the excellent climate lab that the program has created.

7. Inadequate formal linkages within the institution. Perhaps owing to the excessive teaching and student loads carried by the program, little attention has been given to the

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[22]This assessment is consistent with employers' descriptions of the program's strength in educating students who get high marks for abilities to synthesize, as per the undergraduate focus, but not for more technical or advanced knowledge and skills commensurate with graduate studies.

development of formal degree and research links with other programs in the institution. This issue includes course requirements for geography majors (both individual courses and minor requirements), joint degree programs, and interdisciplinary research.

8. Very low faculty salaries. Given the cost of living in the Tampa area, faculty salaries appear to be quite low. Indeed, if the program's function was defined solely as that of undergraduate teaching, the salaries are low given the outstanding performance in this function. Furthermore, it may be difficult to attract top quality faculty replacements, even at the beginning assistant professor level, given this salary structure.

SUMMARY

The USF geography program appears to be in a state of healthy transition. Formerly, a very large and apparently strong undergraduate program was emphasized during a time that the institution sought to move toward programs representative of comprehensive universities, elevating the role of research, grants, publications, and graduate studies. Essentially reduced to three full-time, tenure-line faculty members at the main campus, the program fought to retain its status in the face of an administration that provided little or no support. Apparently, this "low point" or nadir of the program's history has been passed; the current administration appears to be

supportive of developing a solid graduate-level geography program and has brought in a new chair to rebuild geography. Rebuilding requires careful planning to create a program that fits within the USF framework, links with other programs, and finds a balance among teaching, research, and other professional activities. The new chair must seek to retain the strengths of the program while building in areas of need.

RECOMMENDATIONS

1. A formal planning document and schedule is needed. This document should not be prepared in haste but as the new chair develops a better understanding of the USF scene. It should seek to define and develop the program's teaching and research strengths, to detail the institutional linkages that will strengthen geography, and to provide an understanding of the levels and balance of teaching, research/publication, and other professional activities expected of members of the program. Scheduling dates by which specific objectives will be met may be most useful for all involved.

2. Increase the number of faculty. The program is simply too small to carry its course offerings and a graduate/ research program (see number 3). So few faculty cannot achieve a "critical mass" in several foci of research. The program should "shoot" for a size of about eight tenure-line faculty in the near future, but great care must be taken to hire suitable faculty who fit with the program foci and

possess a demonstrated balance of academic activities.

3. Reduce undergraduate teaching loads and restructure the teaching program. Many four credit courses should be reduced to three. The number of large service courses should be reduced in an effort to provide more advanced level course work and time for formal advising. Finally, differential course loads should be considered for those who are engaged in major research and other professional activities. These steps would not affect the undergraduate teaching program if the small size of the core staff were increased (see number 2).

4. Maintain and expand the undergraduate internship program. This program has been most successful in the past and should not be allowed to fall by the wayside during the restructuring that is undoubtedly forthcoming.

5. Restructure the graduate program. At least two areas of specialization should be defined and a structured curriculum developed based on them. The department has expressed an interest in applied environmental and urban studies, and these seem most appropriate for the greater Tampa-southern Florida area. Regardless of the precise decisions, improvement in studies devoted to analytical and computer skills are needed.

6. Improve the computer graphics-GIS capability of the program, develop a cartographic lab, and maintain the climatology/meteorology lab. This will require "minor" levels of funding by hard science standards, but will provide the

program with the essential equipment and facilities expected of a modern geography program. Such equipment and facilities are crucial if the MA program is to retain respectability. Every effort should be sought to sustain the excellent training facilities in the meteorology lab.

7. Improve the level of extramural funding and general level of research activities. Perhaps "seed grants" should be given to the members of the program most likely to embark upon a sustained course of funded research. Much of this activity should be based on joint efforts with other programs within the institution. It also was noted that alumni and other endowments from the greater Tampa area are possible; if this source could generate significant equipment, fellowships, and professional funds, then it should be pursued.

8. Increase faculty salaries. Even in a buyer's market, the better talent in geography are unlikely to be attracted to USF given the condition of the development that is needed in geography, coupled with the present salary structure. This reviewer has rarely witnessed such low salaries per rank, given the average size of the teaching load.

UNIVERSITY OF WEST FLORIDA

Bachelors in Environmental Resource Management and Planning

Three faculty lines are designated for geographers at UWF and are formally attached to the Department of Sociology, Anthropology, and Geography. The geographical component, however, was instrumental in the development of an independent and interdisciplinary program in Environmental Resource Management and Planning (ERMP), and the large majority of its efforts are attached to ERMP. All teaching and degrees are at the undergraduate level.

STRENGTHS

1. Environmental Resource Management and Planning (ERMP). This is an exciting and appropriate program of study dedicated to interdisciplinary training of undergraduates in physical and environmental geography. The applied focus fits nicely with the environmental planning needs of the region that the institution serves. In five years, the number of majors has risen from 10 to 50.

2. Dedication to and quality of teaching. It is generally recognized by students, faculty, and administration that the geography faculty are the foundation of ERMP popularity and are largely responsible for the quality of teaching and effort given to students. Students praised the

course work offered to them and the dedication of the faculty to serving them.

3. Innovative student/classroom experiences. The geography faculty have created a series of innovative approaches to assist the students to improve themselves and to facilitate their entry into the job market as professional geographers. Among these are senior courses in which students are trained to inform unknowing employers about the skills and services that a geographer can bring to their business. (This reviewer finds this training innovative and yet essential. Students with training in geography can encounter difficulty in finding employment in which they can practice their wares in part because of the geographic ignorance that is prevalent in this country.)

4. Computer equipment. The geographers, apparently through ERMP, have recently obtained computing and related equipment and software that vastly improve their capability to train students in GIS. Efforts are underway to improve faculty experience in this field so that the potential of GIS strategies applied to environmental concerns is strong.

5. Recruiting for geographic studies. The faculty have been active in recruiting majors from the local community colleges through visits geared to educate the potential students about the field of geography and its relation to ERMP.

6. Demand for graduates. Local employers in the environmental fields typically have a high regard for the quality of training of students gaining degrees in ERMP. BA graduates speak highly of the education that they received in the program.

AREAS OF NEED

1. Very high teaching loads. The amount of courses and students taught is exceptionally high (most of the basic courses being taught by two faculty). While classroom contact hours are typical measures of productivity for a purely undergraduate program, students have noted a major decrease in the non-classroom time that the faculty can devote to them--time that has been so important to the general quality of education in the program. This load also impedes the development of new avenues within the program and research activities.

2. Independent geography degree. The attention given to the development of ERMP has diminished attention to the more traditional "liberal arts" education via a pure geography degree. It also impinges upon the ability of geography to serve the SUS Master Plan to provide an experience in "global literacy," a function well suited for the discipline, and to offer service courses for the university. This is so because of the overburdened situation in ERMP.

3. Faculty size. ERMP and the normal geography degree programs are essentially sustained by a faculty of three.

This is minimal "critical" size; indeed, a strong case can be made that this number is too small to serve both functions. The results are faculty stress, excessive faculty to student ratios, and inadequate attention to one or the other responsibility.

4. Teaching criterion. Apparently because geography is placed in the social sciences by the SUS, the student to faculty ratio standards are those of the social sciences. Most of the courses taught at UWF, however, are hard-core physical or earth science courses, many with laboratories, which should fall under the standards of the sciences.[23] This situation creates an additional teaching burden for the geography faculty.

5. Institutional organization of the program. Geography serves two masters: technically housed in a social sciences program, but effectively operating another, hard-science program. The operational problems are obvious, especially given the number of faculty posts in geography.

6. Low salaries. As with several of the other programs assessed in this document, this reviewer has rarely witnessed such low salaries per rank, given the average size of the teaching load.

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[23]This is true for all the climatology, soils, geomorphology, hydrology, and other earth science components of geography in the SUS.

7. Inadequate outreach to Florida geography. The program needs to become more active in the Florida Society of Geographers, particularly as the environmental program grows. Both faculty and students could benefit from contact with other such geographic functions in the state; currently, both appear intellectually isolated from the other Florida activity in their fields of interest.

SUMMARY

Geography at UWF has taken one of two possible courses of action that lead to a viable role for geography within the institutional setting. This involves a programmatic specialization that weds physical geography with an institutional focus, environmental studies. This course of action seems most reasonable, given the circumstances, and the geography faculty have performed magnificently in developing a healthy ERMP program. Problems center on the size and multiple functions attempted, and the administrative organization of the program.

RECOMMENDATIONS

1. The administrative organization of the program needs careful study and possible restructuring, according to the size of the faculty in the near future. A program with three posts cannot serve two functions--liberal arts geography and environmental studies. Currently and apparently in the near

future, the primary function served is the environmental one, while the administrative organization is a liberal arts one. This division is inconsistent and leads to faculty stress that simply should not exist. The program and institution must come to grips with this situation, and not wait until faculty "burn-out" or disillusionment occurs.

2. If geography is to serve two functions, then faculty size must be increased to at least five posts. It is conceivable that a 3-2 faculty post split in geography could allow the environmental studies program to flourish, while permitting geography to serve the "global literacy" and other service functions that a traditional geography program can provide. (An alternative strategy would place four to five geographers or related specialists into the environmental studies program, with the expected results that increased research activity should follow from "critical mass" and lower student to faculty ratios.)

3. Reduce teaching loads slightly. This is critical to maintain quality instruction and tutoring, given the "science" orientation of the program. This should also promote research time and the development of further innovative courses and training, such as a stronger internship program.

4. Make use of the GIS-computer graphics equipment. Action should be taken immediately to retrain the faculty or add faculty who can make use of the new equipment in the classroom and for research. If retraining is the action

taken, then faculty release time is required to upgrade their capabilities in the subject. It is inappropriate to have only one faculty member conversant in the subject. Experience demonstrates that the demand for such training from students and the one-on-one time that such training takes can quickly lead to faculty stress.

5. Provide time and rewards for faculty to expand their research efforts and outreach. A phase-in reduction of teaching loads with time to organize and establish research activities is required. In addition, assistance and rewards for improving contract with the larger environmental and geographic community within the SUS will help alleviate some of the isolation problems of the faculty and students.

APPENDIX A

CURRICULUM VITAE

BILLIE LEE TURNER II
Graduate School of Geography
Clark University
Worcester, MA 01610
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Home Address:
19 Farnum Street
Worcester, MA 01602
Tel. (508) 798-2667

PERSONAL DATA : DOB- December 22, 1945, Texas City, TX
Citizenship - USA
Married, two children

EDUCATION : Miami University (Ohio) 1964-65

B.A. University of Texas at Austin, 1968 (Geography)

M.A. University of Texas at Austin, 1969 (Geography)

Ph.D. University of Wisconsin, Madison, 1974 (Geography)

PROFESSIONAL POSITIONS :

1974-76	Assistant Professor, Department of Geography, University of Maryland, Baltimore County
1975-76	Research Associate, Department of Geography, University of Oklahoma
1976-79	Assistant Professor, Department of Geography, University of Oklahoma
1980-81	Assistant Professor, Graduate School of Geography, Clark University
1981-85	Associate Professor, Graduate School of Geography, Clark University
1983-88	Director, Graduate School of Geography, Clark University
1985-present	Professor, Graduate School of Geography, Clark University

PROFESSIONAL SERVICE :

1978 & 1981	Associate Editor, Proceedings of the Conference of Latin Americanist Geographers
1980-1988	Book Review Editor (or Co-Editor), *Economic Geography*
1981-84	A.A.G. Representative to Section H (Anthropology), A.A.A.S.
1983-85	Editorial Board, *Professional Geographer*
1985	Contributor for IV-3, *A Geographical Bibliography for American Libraries*
1985-86	N.S.F. Review Panel, Geography and Regional Science

1985-present	Editorial Board, *Annals of the Association of American Geographers*
1986-88	Regional Councilor, Cultural Ecology Specialty Group, A.A.G.
1986-87	Chair, Nominations Committee, A.A.G.
1987-present	Coordinator, The Earth as Transformed by Human Action Program
1987	Testimony on the status of geographic education, U.S. Senate Subcommittee on Education, Arts, and Humanities, Oversight Committee on Geography Education, Oct. 29
1987	Bring Geography Back to American Universities, Editorial, *Christian Science Monitor*, Nov. 16, p. 16
1987	Editorial Interview on the status of American Geography, *Monitor Radio*, Nov. 16.
1988	Oversight Committee, Geography and Regional Science Program, NSF
1988	Development of Cooperative Research Agreement with Institute of Geography, USSR Academy of Science
1988-92	Chair, International Geographical Union, Study Group on the Historical Geography of Global Environmental Change
1988-92	Planning Committee, International Geographical Congress, 1992
1989-present	US/Soviet Geography Subcommission of the US/Soviet Commissions in the Social Sciences and the American Council of Learned Societies

AWARDS AND GRANTS (• field projects):

1971-74	Ford Foundation Fellowship, University of Wisconsin, Madison
1972	University of Wisconsin, Madison, Summer Fellowship
1972	Ibero-American Studies Travel Grant, University of Wisconsin, Madison
1973-74	N.S.F. Grant for Doctoral Research•
1976	American Council of Learned Societies, Travel Grant
1977	University of Oklahoma, Summer Faculty Fellowship•
1978-80	N.S.F. Research Grant BNS 78-12537, Anthropology and Geography. PI with P.D. Harrison
1979-80	N.S.F. Research Grant, supplement to BNS 78-12537, Geography•
1981-82	N.S.F. Research Grant BNS 80-24516, Anthropology, Co-PI with P.D. Harrison•

1981	American Council of Learned Societies, Travel Grant
1981-82	*Simon Guggenheim Memorial Fellowship*
1984	Mellon Grant, Clark University
1984-85	N.S.F. Grant BNS 12928-01, doctoral research (A. Gray)
1984-85	N.G.S. Research Grant #2960-84 (in conjunction with doctoral research of A. Ali•
1985	N.S.F. Research Grant SES 84-13657, Geography, Co-PI with D.L. Johnson *et al.* (long-term population reconstructions and change)
1986-87	ACLS/SSRC Joint Committee on African Studies Projects and on African Population, Pre-Research Award, joint investigator with R. Kates and G. Hyden (population-agriculture in Sub-Saharan Africa)
1987	*Distinguished Scholarship Award*, Conference of Latin Americanist Geographers
1987-90	N.E.H. Research Grant, joint investigator with W. Denevan and W. Doolittle (Amerind agriculture in 1492)
1986-	Coordinator of The Earth as Transformed by Human Action Program (Projects: present"ET" symposium & volumes; INTELATEC; ENCAIZ)-A.W. Mellon Foundation Award plus 5 other grant/fellowship sponsors
1988	Rockefeller Brothers Foundation grant for continuation of 1986-87 ACLS/SSRC project above
1988	N.S.F. Grant SES 87-16764, doctoral research (T. Whitmore)
1988	Rockefeller Foundation Research Grant # , doctoral research (D. Mazambani)
1989	Maya work selected for the volume: *The Twenty Greatest Archaeological Discoveries of the Twentieth Century* (J. Malina, ed.)

PUBLICATIONS

<u>Books and Monographs</u>

1983 *Once Beneath the Forest: Prehistoric Terracing in the Rio Bec Region of the Maya Lowlands.* Dellplain Latin American Studies, No. 13 (Boulder: Westview Press).

<u>Books edited</u>

1978 *Pre-Hispanic Maya Agriculture*, with P.D. Harrison (Albuquerque: University of New Mexico Press).

1983 *Pulltrouser Swamp: Ancient Maya Habitat, Agriculture, and Settlement in Northern Belize*, with P.D. Harrison (Austin: University of Texas Press).

1987 *Comparative Farming Systems*, with S.B. Brush (New York: Guilford Press).

in pr. *Agricultura de Maya Prehispanica*, with P.D. Harrison (Mexico, D.F.: Fondo de Cultura Economica), Spanish trans. of 1978 above.

Articles and Chapters

1974 Prehistoric Intensive Agriculture in the Mayan Lowlands. *Science*, Vol. 185, No. 4146, pp. 118-124.

1974 Forms, Functions and Associations of Raised-Field Agriculture in the Old World Tropics, with W. M. Denevan. *Journal of Tropical Geography*, Vol. 39, pp. 24-33.

1976 Prehistoric Population Density in the Maya Lowlands: New Evidence for Old Approaches. *Geographical Review*, Vol. 66, No. 1, pp. 73-82.

1977 Population Pressure and Agricultural Intensity, with R.D. Hanham and R.V. Portararo. *Annals of the Association of American Geographers*, Vol. 67, No. 3, pp. 384-396.

1978 The Development and Demise of the Swidden Thesis of Maya Agriculture. IN *Pre-Hispanic Maya Agriculture*, P.D. Harrison and B. L. Turner II, eds. (Albuquerque: University of New Mexico Press), pp. 13-22.

1978 Ancient Agricultural Land Use in the Central Maya Lowlands. IN *Pre-Hispanic Maya Agriculture*, P.D. Harrison and B. L. Turner II, eds. (Albuquerque: University of New Mexico Press), pp. 163-182 (revised from *Actes*, 1979, below).

1978 Implications from Agriculture for Maya Prehistory, with P.D. Harrison. IN *Pre-Hispanic Maya Agriculture*, P.D. Harrison and B.L. Turner II, eds. (Albuquerque: University of New Mexico Press), pp. 337-373.

1978 The Concept and Measure of Agricultural Intensity, with W.E. Doolittle. *Professional Geographer*, Vol. 30, No. 3, pp. 297-301.

1979 A Maya Dam in the Copan Valley, Honduras, with W.C. Johnson. *American Antiquity*, Vol. 44, No. 2, pp. 299-305.

1979 Prehispanic Terracing in the Central Maya Lowlands: Problems of Agricultural Intensification. IN *Maya Archaeology and Ethnology*, N. Hammond and G.R. Willey, eds. (Austin: University of Texas Press), pp. 101-115.

1979 Ancient Agricultural Land Use in the Central Maya Lowlands. *Actes de XLII Congres International des Americanists*, (Paris, 1976), Vol. 8, pp. 419-436.

1980 Geography and Prehistory in Southern Mesoamerica. *Geo-Science and Man*. Vol. 21 (Historical Geography of Latin America, Papers in Honor of Robert L. West; A.V. Davidson and J.J. Parsons, eds.), pp. 9-15.

1980 Agricultura Intensiva en las Tierras Bajas Mayas: Una Leccion del Pasado. *Biotica*, Vol. 5, No. 2, pp. 69-79.

1980 Una Represa Maya en el Valle de Copan, Honduras, with W.C. Johnson. *Yaxhin*, Vol. 3, No. 3, pp. 199-209 (reprinted from *American Antiquity*, 1979).

1980 La Agricultura en Labor Tierras Bajas Mayas: Leccion del Pasado. *America Indigena*, Vol. 40, No. 4, pp. 653-670 (reprinted from *Biotica, 1980).*

1981 Prehistoric Raised-Field Agriculture in the Maya Lowlands, with P.D. Harrison. *Science*, Vol. 213, No. 4506, pp. 399-405.

1981 Agricultura y Desarrollo del Estado en las Tierras Bajas Mayas. *Estudios de Cultura Maya*, Vol. 13, pp. 285-306.

1983 Wetlands and the Maya: An Overview of the Pulltrouser Swamp Project, with P.D. Harrison. IN *Pulltrouser Swamp: Ancient Maya Habitat, Agriculture, and Settlement in Northern Belize*, B.L. Turner II and P.D. Harrison, eds. (Austin: University of Texas Press), pp. 1-7.

1983 The Excavations of Raised and Channelized Fields at Pulltrouser Swamp. IN *Pulltrouser Swamp: Ancient Maya Habitat, Agriculture, and Settlement in Northern Belize*, B.L. Turner II and P.D. Harrison, eds. (Austin: University of Texas Press), pp. 30-51.

1983 Pulltrouser Swamp and Maya Raised Fields: A Summation, with P.D. Harrison. IN *Pulltrouser Swamp: Ancient Maya Habitat, Agriculture, and Settlement in Northern Belize*, B.L. Turner II and P.D. Harrison, eds. (Austin: University of Texas Press), pp. 246-270.

1983 Comparisons of Agrotechnologies in the Basin of Mexico and the Central Maya Lowlands: Formative to the Classic Maya Collapse. IN *Interdisciplinary Approaches to the Study of Mesoamerican Highland-Lowland Interaction. A Conference at Dumbarton Oaks, October 18-19, 1980*, A. Miller, ed.(Washington,D.C.: Dumbarton Oaks Research, Library, and Collection, Trustees to Harvard University), pp. 13-45.

1983 Constructional Inputs for Major Agrosystems of the Ancient Maya. IN *Drained Field Agriculture in Central and South America*, J.P. Darch, ed. (Oxford: British

Archaeological Reports, International Series 189), pp. 11-26.

1983 Ancient Raised-Field Agriculture in the Maya Lowlands of Southeastern Mexico, with S.R. Gliessman, F.J. Rosado May, and M.F. Amador. IN *Drained Field Agriculture in Central and South America*, J.P. Darch, ed. (Oxford: British Archaeological Reports, International Series 189), pp. 91-110.

1984 Economic Plant Species Associated with Prehistoric Agriculture in the Maya Lowlands, with C. H. Miksicek. *Economic Botany*, Vol. 38, No. 2, pp. 179-193.

1984 The Role of Standing Water and Waterlogged Soils in 'Raised-Field", "Drained-Field', and "Island-Bed' Agriculture, with D.E. Vasey, D.R. Harris, G.W. Olson, and M.J.T. Spriggs. *Journal of Tropical Geography*, Vol. 5, No. 1, pp. 6372.

1984 *Habitat y Agricultura en la Region de Copan*, with W.C. Johnson, G. Mahood, F.M. Wiseman, B.L. Turner, and J. Poole. IN *Introduccion a la Arqueologia de Copan*, Capitulo No. I, Tomo I, C. Baudez, ed. (Tegucigalpa: Instituto Nacional de Antropologia e Historia).

1985 Prehistoric Wetland Agriculture and Its Implications to Intensification: A New World and Raised Field Emphasis, with W.M. Denevan. IN *Prehistoric Intensive Agriculture in the Tropics*, I. Farrington, ed. (Oxford: British Archeological Reports, International Series 232), pp. 11-30.

1985 Issues Related to Subsistence and Environment Among the Ancient Maya. IN *Prehistoric Lowland Maya Environment and Subsistence Economy*, M. Pohl, ed. (Cambridge: Peabody Museum, Harvard University), pp. 195-209.

1987 Purpose, Classification, and Organization, with S.B. Brush. IN *Comparative Farming Systems*, B.L. Turner II and S.B. Brush, eds. (New York: Guilford Press), pp. 3- 10.

1987 The Nature of Farming Systems and Views of Their Change, with S.B. Brush. IN *Comparative Farming Systems*, B.L. Turner II and S.B. Brush, eds. (New York: Guilford Press), pp. 11-48.

1988 The Specialist-Synthesis Approach to the Revival of Geography: The Case of Cultural Ecology. *Annals of the Association of American Geographers*, forthcoming, March.

in.pr. Population Reconstruction of the Central Maya Lowlands: 1000 B.C. to A.D. 1000. IN *Prehistoric Population History in the Maya Lowlands*, T.P. Culbert and D.S. Rice, eds. (Albuquerque: University of New Mexico Press), forthcoming.

in.pr. The Rise and Fall of Maya Population and Agriculture, 1000 B.C. to Present: The

Malthusian Perspective Reconsidered. IN *Hunger and History: Food Shortages, Poverty and Deprivation*, L. Newman *et al., eds.* (Oxford: Basil Blackwell), forthcoming.

Commentaries, Opinions, Replies, and Other

1979 Comment on William T. Sanders' review of *Pre-Hispanic Maya Agriculture*, with P.D. Harrison. *Reviews in Anthropology*, Vol. 6, No. 4, pp. 544-555.

1980 Comments on Maritime Hunter-Gatherers: Ecology and Pre-history. *Current Anthropology*, Vol. 22, No. 1, pp. 742-743.

1981 Research Roles and Goals: A Comment on the Study of Aboriginal and Peasant Cultures by Latin Americanist Geographers. *Geographic Research on Latin America: Benchmark 1980*, Vol. 8, pp. 225-229.

1983 Preface. *Irrigation Horticulture in Highland Guatemala. The Tablon System of Panajachel*, K. Mathewson. (Boulder: Westview Press).

1983 Comment on Pre-Colombian Exploitation of the Manatee in Mesoamerica. *Papers in Anthropology* (University of Oklahoma), Vol. 24, No. 1, pp. 75-78.

1985 Calculating Population and Intensity Levels from Field Remains: A Comment on Coe's Review of "Maya Subsistence," with W.M. Denevan. *American Antiquity*, Vol. 50, No. 1, pp. 166-169.

1985 The Use of Citation Indices in Comparing Geography Programs: An Exploratory Study, with W. B. Meyer. *Professional Geographer*, Vol. 37, No. 3, pp. 271-278.

1986 Mystery of the Maya Revealed. *Focus* (summer), pp. 1-7.

1987 Reply to Trimble, with W. B. Meyer. *Professional Geographer*, Vol. 39, No. 1, pp. 203-204.

1987 Comment on Leighly. *Professional Geographer*, Vol. 39, No. 4, pp. 415-416.

1988 Whether to Publish in Geography Journals. *Professional Geographer*, Vol. 40, No. 1, pp. 15-18.

Technical and Field Reports

1980 Agricultural Livelihoods in Eastern Africa: Classification and Distribution--A First Approximation. *Eastern Africa Regional Studies*, Regional Paper #1, USAID, Program for International Development, Clark University.

1980 Trends and Interrelationships in Food, Population and Energy in Eastern Africa: A Preliminary Analysis, Vols. 1-3, with L. Berry, F. Puffer, H. Schwarz, A. Ford, and others. *Eastern Africa Regional Studies,* Regional Paper #2, USAID, Program for International Development, Clark University.

1983 Micro-Scale Modeling of Behavior and Natural Resource Use Systems: A Trial Formulation. IN *Natural Resource Management Workshop: Collected Papers,* E. Berry and B. Thomas, eds. (International Development Program, Clark University, and Institute for Development Anthropology, Binghamton, N.Y.), pp. 34-45.

1986 Population Reconstruction of the Central Maya Lowlands: 1000 B.C. to Present. *Technical Paper #2,* Millennial Longwaves of Human Occupance Project, NSF, Clark University.

1986 Population Reconstruction of the Basin of Mexico: 1150 B.C. to Present, with T. Whitmore. *Technical Paper # 1,* Millennial Longwaves of Human Occupance Project, NSF, Clark University.

Book Reviews

1979 The Food Crisis in Prehistory. *Archaeology*, Vol. 32, No. 1, pp. 73-74.

1979 Monte Alban: Settlement Patterns in the Ancient Zapotec Capital. *Journal of Archaeological Science*, Vol. 6, p. 396.

1979 The Basin of Mexico: Ecological Process in the Evolution of a Civilization. *Journal of Archeological Science,* Vol. 7, pp. 1-2.

1980 Conservation and Agriculture. *Geographical Review,* Vol. 70, No. 3, pp. 369-370.

1981 Uxpanapa: Agricultural Development in the Mexican Tropics, and Annual Cropping Systems in the Tropics. *Geographical Review,* Vol. 71, No. 4, pp. .

1982 Maya Subsistence. Studies in Memory of Dennis E. Puleston. *Science,* Vol. 217, No. 7, pp. 345-346.

1983 Geography. Towards a General Systems Approach. *Economic Geography,* Vol. 59, No. 1, pp. 101-104.

1983 Agricultural Policy in India: Growth and Equity. *Network for Environment and*

Development, Vol. 3, No. 1, pp. 7-8.

1983 Ecological Aspects of Development in the Humid Tropics. *Network for Environment and Development*, Vol. 3, No. 2, pp. 6-7.

1984 Air Photo Interpretation. *Professional Geographer*, Vol. 36, No. 1, pp. 139-140.

1985 Animal Use by the Cozumel Maya. *Geographical Review*, Vol. 75, No. 2, pp. 221-223.

1987 Population Growth and Social Complexity: An Examination of Settlement and Environment in the Central Maya Lowlands. *American Antiquity*, Vol. 52, No. 4, pp. 886-887.

1988 Andean Ecology and Civilization: An Interdisciplinary Perspective on Andean Ecological Complementarity, with A.J. Bebbington. *Annals of the Association of American Geographers*, Vol. 77, No. 4, pp. 663-666.

PROFESSIONAL FIELD EXPERIENCE

1972-73 Examination of prehistoric Maya agriculture in southern Yucatan, N.S.F. grant and member of N.G.S.-Rio Bec Ecological Project.

1973-74 Examination of prehistoric and contemporary agriculture in Belize, Guatemala, and Mexico, N.S.F. grant above.

1977 Examination of environment and agriculture in the Copan Valley, Honduras, and member of the Copan Sustaining Area Project, N.S.F.-Peabody Museum, Harvard University.

1978 Head, ecological section, Copan Valley Project, Banco de Centroamericano, Honduran Government.

1979 Director, Pulltrouser Swamp Project on environment, agriculture and settlement of ancient Maya, N.S.F.-University of Oklahoma.

1980 Examination of Bajo de Morocoy, Quintana Roo, Mexico, with Colegio Superior de Agricultura Tropical-World Bank.

1981 Co-director, Pulltrouser Swamp Project, N.S.F.-University of New Mexico.

1985 Co-researher, agricultural change in Bangladesh, N.G.S.

PROFESSIONAL CONSULTING/CONTRACTS

1974-75 Principal advisor, N.G.S. Magazine, Maya project.

1980 Classification and mapping of livelihhod systems of eastern Africa, USAID and Program for International Development, Clark University.

1980 Food, Population, and Energy in Eastern Africa Project, USAID and Program for International Development, Clark Unviersity.

1981 Workshop on Environmental Considerations in Regional Planning, Environmental Training and Management in Africa, USAID, Program for International Development, Clark University, and Bureau for Resource and Land-Use Planning, University of Dar es Salaam, Nov. 16-24, Dar es Salaam.

1981-83 SARSA-cooperative agreement, USAID and Program for International Development, Clark University.

1982 Research Fellow, East-West Center (Honolulu), Environment and Policy Insitute.

1983 SARSA, project design for Kordufan, Sudan (Khartoum and El Obied), USAID.

INVITED LECTURES (institutions and special conferences)

1976 Cambridge University, Mesoamerican Conference.

1978 Tri-University Latin American Consortium: Kansas University, Kansas State University, and Wichita State University.

1979 Consejo Nacional de Ciencia y Tecnologia de Mexico and N.S.F., Seminar: Strategies and Use of Soils and Resources of Mesoamerican Cultures, Villahermosa, Mexico.

1980 Department of Anthropology, Brandeis University.

1980 Colegio Superior de Agricultura Tropical, Cardenas, Mexico.

1981 Washburn Lectures, Lowell Institute, Museum of Science, Boston.

1981 Conference on Prehistoric Intensive Agriculture in the Tropics, Department of Prehistory, School of Pacific Research, Australian National University.

1982 Department of Geography and Department of Anthropology, University of Wisconsin, Madison (2).

1983 Department of Geography and Meteorology, University of Nebraska, Lincoln.

1983 Department of Biology, Boston University.

1984 Departments of Anthropology and Geography, SUNY Albany.

1985 Department of Geography, University of Wisconsin, Madison.

1985 Department of Anthropology, Harvard University.

1985 Department of Geography, Boston University.

1985 Department of Geography, University of Massachusetts, Amherst.

1985 Divinity School, Harvard University.

1987 A.S. Feinstein World Hunger Institute, Brown University.

1988 Institute of Archaeology and Department of Geography, UCLA (2).

1988 Committee on Geography, University of Chicago.

1988 President's Plenary Lectures, AAG, Phoenix.

1988 Department of Geography and Latin American Studies Program, University of North Carolina (2).

1988 Institute of Geography, USSR Academy of Sciences

1988 Department of Geography, University of Colorado, Boulder

1988 Department of Plant Pathology, Cornell University

1989 Department of Anthropology, Boston University (March)

1989 Forum on Global Change and Common Futures, Nat. Acad. Sciences, Smithsonian Inst., Amer. Assoc. Adv. Science, & Sigma Xi (May)

February, 1988

ADDENDUM TO VITA (B.L. TURNER II)

RESEARCH AND PUBLICATIONS IN PROGRESS

1. *The Earth as Transformed by Human Action*, ed. with W.C. Clark, R.W. Kates, J.F. Richards, J.T. Mathews, and W. B. Meyer. Cambridge: Cambridge University Press.

2. *Agricultural Growth or Stagnation in Bangladesh, 1950-85? Six Villages in Bangladesh*, with A.M. S. Ali (manuscript completed).

3. *Population and Agriculture in Sub-Saharan Africa*, ed. with G. Hyden and R.W. Kates (manuscript in preparation).

4. *Pulltrouser Swamp Revisted The Ancient Maya Occupation and Use of a Wetland in Northern Belize*, ed. with P.D. Harrison (results of 1981-82 field project, early stages of preparation).

5. *Amerind Agriculture in 1492: Central America and the Caribbean*. Berkeley: University of California Press (1of 3 volumes funded by NEH; research underway).

SPECIAL RECOGNITION OF RESEARCH

1975 *National Geographic Magazine* (Vol. 148, No. 6), The Maya: Children of Time.

1982 *Quark* (Italian Public TV), The Masters of the Jungle

1983 *Odessey* (PBS-TV), The Mysterious Maya

1983 *1983 Yearbook of Science and the Future*, Encyclopedia Britannica

1985 *Newsweek* (May 13), Treasures of the Maya

1987 *Discovery* (June)

RESEARCH AND FOUNDATION AWARDS

1. Estimated total of personal research awards in excess of $ 250,000 primarily from NSF, NGS, and NEH.

2. Coordinator of The Earth as Transformed by Human Action symposium and volumes; $350,000 raised from NGS, World Resources Institute, R.W. Mellon Foundation, and USIA.

3. Head of The Earth as Transformed by Human Action 5-year research program; $340,000 raised primarily from R.W. Mellon Foundation.

APPENDIX B

Geography Program Review
Local Consultant

University of Florida
Dr. Richard L. Morrill
Department of Geography
University of Washington

Florida State University
Dr. Susan L. Cutter
Department of Geography
Rutgers University

University of South Florida
Dr. Thomas L. Bell
Department of Geography
University of Tennessee, Knoxville

Florida Atlantic University
Dr. Kenneth E. Corey, Dean
College of Social Science
Michigan State University

University of West Florida
Dr. Donald R. Hoy
Professor Emeritus, Geography
University of Georgia

APPENDIX C

Geography Program Review
University Coordinators

University of Florida
Dr. Edward Malecki, Chair
Department of Geography

Florida State University
Dr. Morton Winsberg
Department of Geography

University of South Florida
Dr. Dewey Stowers
Department of Geography

Florida Atlantic University
Dr. Ronald Schultz, Chair
Department of Geography

University of West Florida
Dr. Jerry Colling, Chair
Department of Sociology, Anthropology
and Earth & Atmospheric Sciences

APPENDIX D

EXECUTIVE SUMMARY AND ANALYSIS

In 1989-90, geography was reviewed for the first time in the SUS. Dr. B. L. Turner, Professor of Geography at Clark University, served as lead consultant. Five SUS universities offer a total of nine degrees in geography, including of four bachelors, four masters, and one doctoral program. In addition, UWF offers a Bachelors in Environmental Resource Management and Planning, and FAU offers a Masters in Urban and Regional Planning.

As a discipline, geography can make great contributions toward the Master Plan goals of improving undergraduate education, forging public-private relationships, and, especially, solving certain of Florida's critical growth problems. However, the relationship between the educational and professional needs of Florida and the roles of advanced education in geography towards meeting those goals has yet to be fully articulated in the SUS. In this vein, geography in Florida might best be described as a case of unrealized opportunities.

For the most part, geography programs have steered programmatic paths consistent with their institutional missions. Virtually all geography programs play a major role in university service courses. The MA programs have generally focused on applied-degrees which are on target for the needs of the state. Commendably, various of the SUS programs are engaged in the promotion of geography in K-12 education and in teacher training. While most of the geography programs provide outstanding teaching, particularly at the undergraduate level, the consultants recommend that the issues of faculty size and teaching loads need to be addressed.

FOR CONSIDERATION BY THE BOARD OF REGENTS

1. Florida is under-represented in the field in terms of the number of programs and student enrollments in the universities, given the population of the state. A strategically designed and implemented program of development could make Florida the leader of the South in geographic education. An increase in the production of doctoral and masters graduates is warranted; this could be accomplished through expansion of current programs or through new programs, provided that they receive sufficient resources.

2. Graduate enrollments might be enhanced through an SUS coordinated effort designed to increase the number of SUS undergraduates matriculating to SUS graduate programs.

3. Much more activity could and should be invested in formal inter and multi-disciplinary teaching and research linkages. The SUS should perceive this as a System-wide area for improvement and, to the extent possible, take steps to provide the infrastructure for such linkages.

FOR CONSIDERATION BY THE UNIVERSITIES

1. Geography programs typically are low in the numbers of faculty per program when compared to national standards. The absence of critical mass of faculty generally translates to a large teaching load, and negatively impacts attempts at extramural funding, research, and publication.

2. The need for a better balance between teaching, research, and service of program members is one of the most fundamental recommendations stemming from the program review. While the

absence of such a balance is partially a product of absence of a critical mass of faculty, it is also due to programmatic and individual faculty perceptions of the relative importance of these components.

3. All geography programs would benefit from formal planning documents which state goals, timetables, and strategies for the improvement of formal research and teaching linkage efforts. While all programs appear to serve their regional missions well, some need to begin to think more nationally and internationally in scope and visibility.

4. Levels of extramural funding need to be improved. Programs are not adequately benefiting from the equipment and student support that can be garnered from such funding. Collaborative and inter-departmental and disciplinary efforts which increase chances for extramural funding should be encouraged.

5. Considerably more effort in planning, promotion, and recruiting is needed in graduate education. Increasing the number of graduate students and graduate courses would be beneficial. Graduate stipends for this discipline, both number and amount, are low by national standards.

6. Computer capabilities need to be upgraded and increased, particularly in the area of computerized cartography.